Original Article

Topical diclofenac versus oral diclofenac in the treatment of mastalgia – a randomized clinical trial

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Objective: To compare the effectiveness of topical versus oral diclofenac in treatment of cyclical and non-cyclical mastalgia.

Methodology: This prospective, parallel group, double blind, randomized clinical trial was carried out from April 2011 to August 2012 at Railway Hospital, Rawalpindi, Pakistan. It included female patients over age 12 who presented to surgical outpatient department with cyclical or non-cyclical mastalgia. They were randomized to either oral diclofenac sodium or topical diclofenac gel for 7 days through computer generated block randomization. Both patients and doctors were blinded to treatment. The response to treatment was measured with Cardiff breast pain score (CBS) at 7, 30 and 90 days. The effectiveness of both drugs was compared along with the need to use drugs to relieve pain after 7 days and side effects.

Results: A total of 100 patients were recruited with 50 patients were randomized to each group. Response rate was 62% with oral diclofenac sodium and 78% with diclofenac gel at the end of first 7 days. There was no significant difference between the efficacy (P value of CBS at 7, 30 and 90 days was 0.56, 0.88 and 0.94, respectively). Need to use drugs after 7 day and side effects of both drugs were same.

Conclusion: Both forms of drugs were effective in reducing mastalgia to at least CBS II which is considered bearable by the patient. No formulation has any advantage over the other. Patient's personal comfort level with a specific formulation can be the basis for choosing one over the other. (Rawal Med J 2013;38: 371-377).

Key words: Mastalgia, non-cyclical mastalgia, non-steroidal anti-inflammatory drugs.

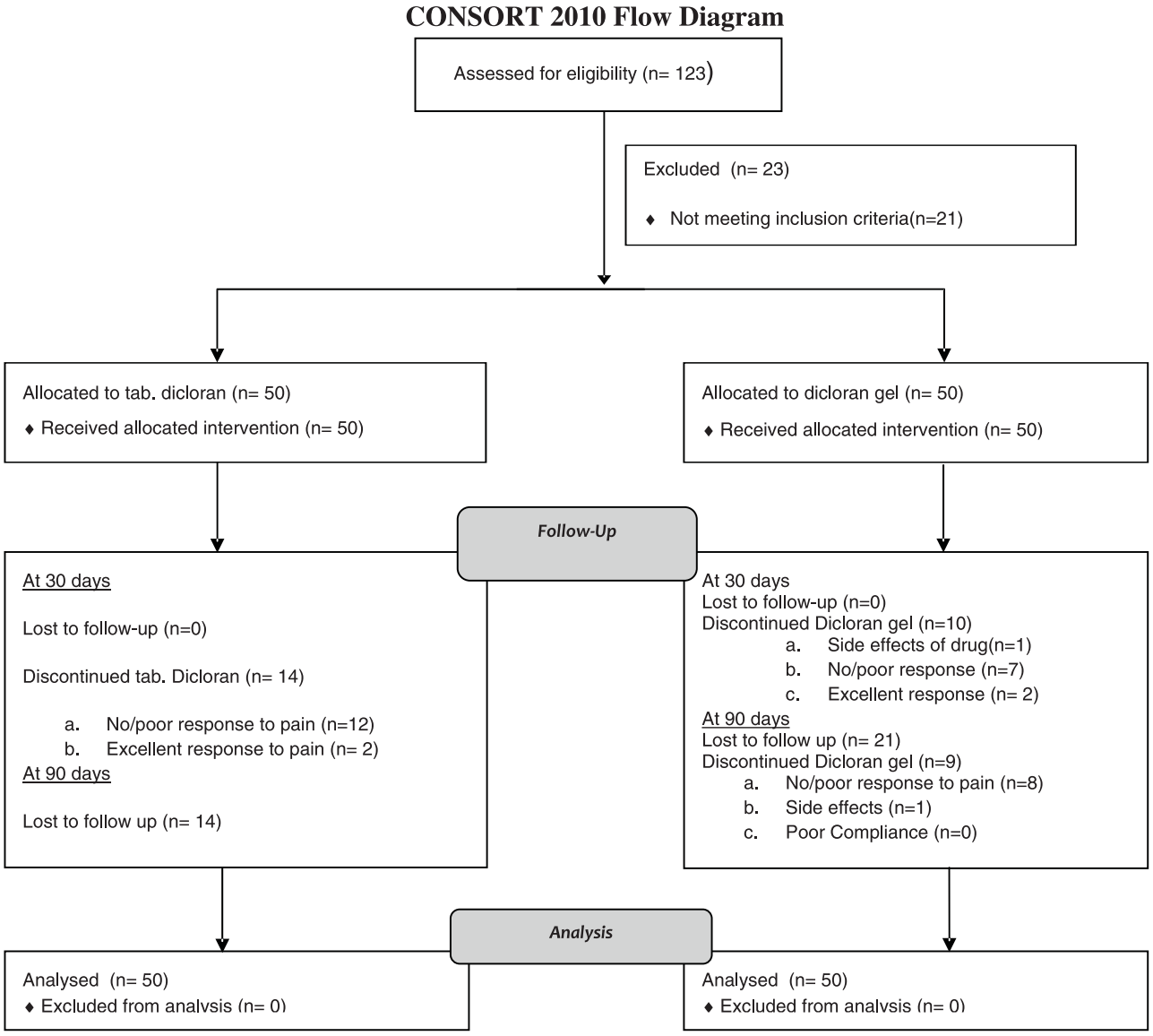
INTRODUCTION

Mastalgia is a common symptom in females of reproductive age and is one of the commonest reasons for consultation in surgical outpatient department and primary care clinics.[1,2] Ader and Shriver reported that 30% of premenstrual women suffered from cyclical mastalgia lasting for more than 5 days a month which was of sufficient severity to interfere with sexual, physical, social and work related activities.[3] Stress levels among women with severe mastalgia were found to be similar to those found in pre-operative women with breast cancer.[4] The exact etiology of mastalgia is not known and various mechanisms including psychoneurosis and duct ectasia have been investigated as a possible cause.[5] This has led to formulation of various treatment modalities for both cyclical and non-cyclical mastalgia ranging from simple reassurance[6] and life style changes[7] to drug treatments.[8]

The drug treatment ranges from the use of simple non-steroidal anti-inflammatory drugs (NSAIDs) both locally and orally and evening primrose oil to more complex endocrine treatments.[8,9] Although NSAIDs are easily available, cheap and quick acting, the data on the effectivenss of their use is sparse. Even fewer trials have been conducted on the use of topical NSAIDs.[10-12] There is no trial that has compared the use of oral NSAIDs with topical NSAIDs. We, therefore, designed this study to compare the two NSAID formulations for treatment of mastalgia. Our hypothesis was that "topical diclofenac is equal in efficacy to oral diclofenac sodium and has fewer side effects in the treatment of mastalgia". The objectives of the study were to determine the effectiveness of topical diclofenac as compared to oral diclofenac in treatment of cyclical and non-cyclical mastalgia, to determine the side effects of both formulations of drug and to assess need for continued treatment after one week for both drugs.

METHODOLOGY

It was a prospective, blinded, randomized, controlled clinical trial carried out from April 2011 to August 2012 at Railway Hospital, Rawalpindi, Pakistan. Females of age above 12 years who presented with a history of cyclical or non-cyclical mastalgia were assessed for eligibility based on history and thorough examination. Radiological investigations were employed whenever indicated to rule out any association with known breast pathology. Only those patients were recruited in the study who thought that pain was severe enough to require drugs. All patients who had a coincident benign or malignant breast disease, surgical scar or known allergy to diclofenac were excluded from the study. Known cases of asthma, peptic ulcer disease, renal or hepatic failure or skin allergies contraindicating the use of the drugs under investigation were also excluded. All of them were reassured regarding the nature of mastalgia before starting treatment so that the treatment effect of reassurance does not bias results.[6] A power calculation was made based on significant decrease in breast pain scores after treatment with topical diclofenac gel from published data.[9,10] At 80% power and p<0.050 the number of patients required in both arms of the study were 49.



After assessment for eligibility and informed consent, each patient was assigned a sequence number. Patients were randomized through computer-generated list by block randomization into five blocks of 20 each by one of the co-investigators who was not involved in patient assessment and management. Patients were randomized to two groups. The patients after being allotted a sequence number were given medicines according to the group against that sequence number in randomization table. Group A received tablet diclofenac sodium 50 mg three times daily for 7 days along with a topical placebo to rub in the painful breast three times daily for the same number of days. Group B received topical diclofenac gel three times daily for 7 days along with oral placebo to be taken thrice daily for the same number of days. All patients reported after 7 days to the first investigator who had assigned them a sequence number and their responses were noted on a proforma. Both patients and the doctor recording the pain response were blinded to treatment. The pain responses were recorded according to the Cardiff breast pain score (CBS) (primary outcome measure) in four categories as follows: CBS I: An excellent response leaving no pain, CBS II: A substantial response leaving some residual pain that is considered "bearable" by the patient, CBS III: A poor response leaving substantial residual pain, CBS IV: no response.[13]

Treatment was considered successful if the patient had a CBS I or II (responders). After 7 days the patients used the drug only on need basis. Second follow up was done at 30 days and frequency of the need to use drug to remain pain free was noted (secondary outcome measure) and recorded as no need (drugs not needed at all), occasional need (drugs required less than once a week), frequent need (drugs required for more than once a week), regular need (drugs required for at least once daily). Side effects (secondary outcome measure) were noted and categorized as none, mild (corrected with treatment) and severe (had to stop medicine).

As the data was not normally distributed, Mann-Whitney U test was used to compare the mean pain scores instead of a t-test. The analysis was performed using intention to treat approach. Chi-square was used to compare the drugs in terms of need for treatment after 7 days and side effects. The effect size Cohen's d and cliff's delta (r) were also calculated for the difference in effect size of both drugs. All data analysis was performed using the statistical software SPSS 16.0.

RESULTS

A total of 100 female patients were recruited for the study. The age ranged from 16 to 70 years with a mean of 30.94 ± 9. 91%. 9% patients suffered from cyclical mastalgia.

The baseline characteristics of the patients in both groups are shown in Table 1.

Table 1. Baseline characteristics of study population.

	TYPES OF MASTALGIA		MEAN AGE (years)	MEAN CBS		
	Cyclical (n)	Non-cyclical (n)		At 7 days	At 30 days	At 90 days
GROUP A Tab. Diclofenac	3	47	29.56 ± 8.71	2.16 (CI 1.80-2.52)	1.56 (CI 1.23-1.88)	1.17
GROUP B Diclofenac gel	6	44	32.32 ± 9.18	1.92 (CI 1.65-2.19)	1.48 (CI 1.21-1.74)	1.25

CBS = Cardiff breast pain score, CI = confidence interval

Table 2. Response rates.

	GROUP A (n) Tab. Diclofenac	GROUP B (n) Diclofenac gel	Over all
At 7 days	31/50 (62%)	39/50 (78%)	70%
At 30 days	32/36 (88.9%)	36/40 (90%)	89.5%
At 90 days	18/18 (100%)	19/20 (95%)	97.4%

Table 3. Side effects of treatment.

		SIDE EFFECTS (n)			Total (n)
		None	Mild- corrected with treatment	Severe- had to change medicine	
TREATMENT GROUP	Tab. diclofenac	46	2	2	50
	Diclofenac gel	46	3	1	50
Total		92	5	3	100

P value (2-sided) = 0.7

Table 4. Need for treatment after 7 days.

		Need for treatment after 7 days (n)				Total
		No need	Occasional	Frequent	Regular	
Treatment group	Tab. Diclofenac	20	10	3	6	39
	Diclofenac gel	21	11	4	6	42
Total		41	21	7	12	81

P value = 0.99

Table 2 shows response rates of both groups at different time intervals.

Mann Whitney U test to compare the effectiveness of both drugs found no significant difference in their mean ranks. The corresponding P value for CBS at 7, 30 and 90 days was 0.56, 0.88 and 0.94, respectively.

The effect size Cohen's d calculated was 0.2 (small effect size) with Cliff's delta (r) = 0.1.

Chi-square tests used to see the difference between two groups in terms of side effects (P value = 0.7) and need for treatment (P value = 0.99) showed no significant difference. (Tables 3 and 4).

DISCUSSION

The treatment of mastalgia is as imperfect as the knowledge of its etiology. No single mechanism holds true for every patient and therefore no single effective therapy should be anticipated. This has obviously led to different treatment options ranging from reassurance to simple lifestyle changes to drug therapies.[6,7] Main treatment options compared and trialed in literature are anti-estrogens (danazol,[13] tamoxifen, toremifen,[14] centchroman,[15] afimoxifene),[16] dopamine agonists (cabergoline,[17] quinagolide,[18] bromocriptine),[13] GnRH agonist (gosereline),[19] customary treatments (evening primrose oil,[13, 20,21] gamolenic acid,[22] vitamin E,[20,21,23] vitex agnus castus),[24] and other options (acupuncture,[25] local anaesthetic injection[26] and even surgery),[27]

The role of analgesics has remained vague in literature. Guidelines in a Canadian journal indicated flaxseed as first line of treatment in cyclical mastalgia while topical NSAID were only recommended in non-cyclical local mastalgia.[28] Although analgesics are one of the groups of drugs used for mastalgia, research about their effectiveness is quite spars. It may be because of the reason that cyclical mastalgia is more common and people have focused on hormonal treatment options more frequently.

Our experience regarding the proportion of patient requiring treatment is different. In our study, majority that consented for treatment were having non-cyclical mastalgia. This is contrasting to other studies where majority patients had cyclical mastalgia.[13] The reason for this can only be speculated that because the sample was controlled for reassurance the majority of cyclical mastalgia patients opted not to be treated.

Amongst NSAIDS investigated for use in mastalgia include nimesulide which has shown good results.[29] Other NSAIDs that have been used so far include celecoxib[30] and diclofenac gel.[11,31] The effect of NSAID gel piroxicam was reported for the first time in literature on 26 patients and the response rate was found to be 81%.[31] After that, another placebo controlled trial confirmed the effectiveness of diclofenac, with an inferior response rate of 47% in cyclical and 50% in non-cyclical mastalgia.[10] Another study compared piroxicam and diclofenac gel and showed that piroxicam had a better response rate (92%) as compared to diclofenac (60%) at the end of two months interval.[11] The piroxicam gel had a similar response rate in another study.[12] Topical NSAIDs have also been compared with evening primrose oil (EPO) and have shown significantly better results than EPO.[12] Another study focused on use of celecoxib in benign breast disease. The authors mentioned 80% response rate (CBS I and II) as compared to 40% in EPO group.[30]

Our trial focused on comparing the oral and topical preparations of NSAIDs for the first time so that a preference could be established based on results. Our study was also different from others mentioned above in that it looked for an early response to treatment in 7 days. This in our point of view was very important because the drugs are short acting and the true effect lasts only for the short term and that only represents the true response to the drug. Furthermore as mastalgia has a long term course and tends to relapse despite adequate drug treatment,[32] therefore, it would be useless to prescribe cumbersome drug treatments over months that patients are unlikely to adhere to. Simple short-term analgesics initially followed by an "on needs basis" regimen can be very useful where no contraindication exists.

Our study demonstrated that both groups of drugs were effective in producing pain relief to at least the level considered bearable by the patients; however, none of the treatment group was superior to the other. When compared to the response rates of other medications the analgesics have an early response rate of 70% overall and 89.5% at 3 months according to our study. This is comparable to response rates of danazol,[13] bromocriptine,[13] cabergoline,[17] toremifen,[14] and centchroman.[15] However, response rates were better than gamolenic acid,[22] vitex agnus castus,[24] evening primrose oil and vitamin E.[20.21] However, in the majority of the above trials the studies were done on groups of patients having purely or predominantly cyclical mastalgia. As in our study, majority of the patients had non-cyclical mastalgia, meaningful comparison cannot be made.

None of the previous trials mentioned have measured response to treatments over short term so we don't know how do those treatments compare with analgesics in short term.

The main drawbacks of other agents when compared to analgesics is that they have to be used for long periods of time (at least from 2 months to 6 months) [13,23] and have a significant profile of side effects.[13] Although analgesics are short acting the response rate increases with time. This should not be confused with a long term effect of analgesics because all those patients who do not respond to analgesics initially tend to shift to other drugs and consequently the only patients who continue to use drugs are those with favourable response thus improving the percentage over time. In addition non-cyclical mastalgia has been reported to be more common in postmenopausal women.[9] However, our study found that it was also the commonest form in pre-menopausal patients as well.

CONCLUSION

NSAIDs with a good short term effectiveness and least side effects profile should be first line of treatment in mastalgia patients. There is no significant difference between effectiveness, side effect profile and duration of effectiveness in both

oral and topical formulations of diclofenac sodium. The preference in a particular patient can be based on individual choice of the patient.

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Original Article

Post-operative pain control for perineal surgeries: A comparative study of caudal ketorolac versus lignocaine block

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Objective: To compare postoperative analgesia provided by caudal ketorolac and caudal lignocaine after perineal surgeries like haemorrhoidectomy, anal fissurectomy, anal fistulectomy, excision of pilonidal sinus, correction of hypospadias and epispadias.

Methodology: This study was conducted at the Anesthesiology Department Islamic International Medical College-Trust (IIMC-T), Railway Hospital, Rawalpindi, Pakistan over a period of 6 months. Conventional sampling included a total of 50 patients undergoing perineal surgeries under general anesthesia. All patients were given nalbuphine 10 mg I/V, preoperatively. At the end of surgery, they were divided into two groups; Group A comprised of 25 patients and were given lignocaine 1% through caudal block and Group B comprised of 25 patients, and were given ketorolac 10 mg through caudal route. A Visual Analogue Scale (VAS) in the post anesthesia care unit (PACU) assessed pain relief.

Results: Caudal lignocaine in group A provided analgesia within 3±1 minutes and duration of action varied from 2-4 hours. In group B patients, ketorolac provided onset of action within 10±5 minutes and duration varied from 1-3 hours. Pain relief was 80% with lignocaine and 50-60% with ketorolac.

Conclusions: Caudal lignocaine provided better analgesia, with fewer side effects and was more economical since need of adjuvant pain killers was less frequent in this group. (Rawal Med J 2013;38: 378-381).

Keywords: Postoperative analgesia, perineal surgery, caudal block, ketorolac, lignocaine.

INTRODUCTION

Postoperative pain needs to be managed adequately to improve patient's compliance and the outcome of surgery. Various modalities of management have been successfully used and are in routine practice in the postoperative recovery rooms and wards.[1] These include oral drugs, parenteral medications, regional anaesthetic techniques, acupuncture, Patient controlled analgesia (PCA) and physiotherapy.[2]

The regional anesthetic techniques can be employed either as single shot bolus or by continuous catheter techniques like epidural catheters. Regional blocks most commonly implicated for postoperative analgesia are the central neuraxial blocks and wound infiltration by local anaesthetics.[3] When there is tissue injury, prostaglandins are produced by the action of cyclo-oxygenase enzyme on arachidonic acid which itself forms by the lytic action of phospholipase A_2 on the cell membrane lipids.[4] The prostaglandins thus produced act as a pain producing chemical. Pharmacologically, the non steroidal anti-inflammatory drugs (ketorolac) block the action of cyclooxygenase enzyme and so produce analgesia.

Many surgical procedures like haemorrhoidectomy, anal fissurectomy, fistulectomy , perianal abscess drainage, rectal polypectomy, treatment of rectal prolapse and the correction of hypospadias/ epispadias can be carried out on outdoor basis under regional anaesthesia.[5] Caudal block is favorable and easier to perform technique for this purpose, since it renders the patient mobile and pain free postoperatively, simultaneously providing effective intraoperative analgesia.[6] Conventional pain killers given for post operative analgesia like NSAIDS and opioids carry their own risks of bleeding, GIT irritation.

Ketorolac is available for parenteral use and is free of respiratory depression. It provides analgesia by inhibiting prostaglandin synthesis. While not as potent as narcotics it can be an effective alternative to narcotic analgesics without major complication.[7,8]

Local anaesthetics act by blocking the sodium channels in the nerve cell membrane and thus blocking the nerve cell conduction. The prototype drug of local anaesthetics, lignocaine remains the

most versatile and commonly used local anaesthetic because of its inherent potency, rapid onset and moderate duration of action.[9] The aim of this study was to compare the effectiveness of caudal ketorolac in comparison to caudal lignocaine for post-operative analgesia after perineal surgeries.

METHODOLOGY

This prospective study was conducted at the Department of Anesthesiology, IIMC-T, Railway Hospital, Rawalpindi, Pakistan over a period of 6 months. After the approval of the Hospital Ethics Committee, an informed consent was taken from all patients. A total of 50 patients aged 16 to 60 years planned for elective perineal surgeries under general anesthesia like hemorrhoidectomy, anal fissurectomy, and fistulectomy, excision of pilonidal sinus, and correction of hypospadias and epispadias were included in the study. All patients were in ASA 1. Patients with any systemic disease, obesity, extreme of age, allergic to local anesthetics or NSAIDs and with any contraindication to regional anaesthesia like infection at the injection site, anatomic deformity etc were excluded from the study.

Premedication with anxiolytics oral diazepam 10 mg night before surgery had already been given. Intraoperative analgesia was provided with nalbuphine 10mg I/V. After completion of the surgery, patients were then conveniently divided into two groups using lottery method. Group A comprised of 25 patients and were given lignocaine 1% according to body weight (1ml /kg), via caudal epidural route. Group B also comprised of 25 patients, and were given ketorolac 10 mg, through caudal epidural route. Both the drugs to be used for the caudal block were prepared in the same manner.1% The anesthetist who performed the caudal block was unaware of the drug used (either lignocaine or Ketorolac) and the pain was measured by another registrar level anesthetist in PACU using visual analogue scale (VAS). Pain was measured every 30 minutes for the first 6 hours and then hourly till 24 hours of surgery. "Postoperative Pain Assessment Graph for first twenty-four hours" was used to assess the onset of analgesia, duration of analgesia and percentage pain relief. The parameters used to assess the onset of analgesia were subjective feeling of pain and objective parameters like heart rate, blood pressure and respiratory rate.

Statistical analyses were performed using SPSS version 12. Student's t-test was used to test for significant differences in ordinal and continuous variables. Range was calculated for continuous variables and frequencies and percent for categorical variables. A p-value <0.05 was considered statistically significant.

RESULTS

Out of 50 patients, 30 (60%) were male and 20 (40%) were female. Most were in 51-60 years age range (table 1). Hemorrhoidectomy was the commonest procedure performed (Table 2).

Table 1. Gender and age distribution of study population.

Gender	Number	
MALE	30	
FEMALE	20	
TOTAL	50	
Age	**Number (A)**	**Number (B)**
16-20 Years	2	3
21-30 years	5	5
31-40 Years	5	3
41-50 Years	3	6
51-60 Years	10	8
Total	25	25

The onset of action was quicker with lignocaine was 3±1 minutes compared to 10±5 for ketorolac (Table 3). Pain relief was 80% with lignocaine and 50-60% with ketorolac ($p<0.05$) (Table 4).

Table 2. Types of Surgeries Conducted

Type of Surgery	Number (A)	Number (B)
Hemorrhoidectomy	11	10
Anal fissurectomy	5	3
Anal fistulectomy	2	2
Drainage of perianal abscess	1	4
Removal of anorectal foreign body	0	1
Treatment of rectal prolapse	0	1
Rectal polyp excision	1	0
Correction of hypospadias and epispadias	5	4
Total	25	25

Table 3. Time of onset

Drug	Time of onset
Xylocaine 1%	3 ± 1 Minutes
Ketorolac	10 ± 5 Minutes

Table 4. Percentage pain relief

Drug	Percentage pain relief
Xylocaine 1%	80
Ketorolac	60

Lignocaine produced analgesia of longer duration than ketorolac ($P<0.05$) and less injection of additive drugs were required as compared to ketorolac during the first 24 hours postoperatively (Table 5).

Table 5. Duration of action.

Drug	Duration of action in hours
Xylocaine 1%	4 ± 2
Ketorolac	3 ± 1

DISCUSSION

The pain relief is better with lignocaine and was about 80% for perineal surgeries. With ketorolac, percentage pain relief is 50-60 %. The onset of action with Lignocaine was faster. It is not clear whether ketorolac acts locally by inhibiting pain producing substances like prostaglandins at the wound site or acts peripherally after systemic absorption. Different workers have used different drugs through caudal route in their study groups to establish the efficacy of this route for analgesia postoperatively. Caudal route is thought a safe route for paediatric patients especially for minor out door procedures due to ease of performance.[10]

Ketorolac in a study for post operative pain relief after tonsillectomy[11] and myringotomy,[12] in dose of 1 mg /kg IV and oral was found as effective as paracetamol. In another study, parenteral ketorolac was found as safe as diclofenac for the treatment of pain after major surgery.[13] In another study, ketorolac 30 mg IV and paracetamol 2000 mg were equally effective after total abdominal hysterectomy.[14] In a qualitative systemic review of post operative pain studies at Medline (1966–Jan 2001) and the Cochrane Library (Jan 2001), comparison was made between paracetamol 1000 mg with NSAID in a double blind, randomized manner. The efficacy of both drugs was more or less found same.[15] These studies focused on use of IV or oral ketorolac.[17,18]

One study also focused on wound infiltration with ketorolac for postoperative analgesia.[18] None of these was based on epidural use of ketorolac. The present study was carried out in an effort to determine whether ketorolac given through epidural route was also as effective as other routes for postoperative pain. Caudal route of administration was chosen due to ease of performance and reliability, and since it can be used for "anything surgical below umbilicus".

CONCLUSION

Caudal lignocaine was better than ketorolac in relieving postoperative pain after perineal surgeries for first 24 hours giving an earlier onset of effects, longer duration of action, increased percentage of pain relief and was economical.

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Original Article

Vacuum assited wound closure and normal saline dressing in treatment of Gustilo type II, type IIIa and IIIb open fracture of tibia

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Objective: To evaluate and compare the effectiveness of Vacuum Assisted Wound Closure (VAC) as against normal saline dressing in Gustilo type II and type IIIA, IIIB open tibia shaft fractures.

Methodology: It was a prospective randomized comparative study carried out at Department of orthopedics, Pakistan Ordnance Factories (POFs) Hospital, Wah Cantt, Pakistan from March 2010 to March 2012. It included a total of 50 patients aged 10-40 years with open tibial shaft fractures, Gustilo type II and type IIIA, IIIB. Patients were divided into two equal matched groups using randomization: Group A was treated with VAC therapy and group B with normal saline dressing. We compared the site of wound on tibia, and the rate of wound healing. Data analysis was performed using SPSS version 16.0. Results were compared using Chi-square test by keeping the p-value of <0.05 as significant.

Result: Wound healing time was maximum of 10-20 days in group A, and 31-40 days in group B.

Conclusion: Vacuum-Assisted Closure Therapy was a superior modality of wounds treatment for Gustilo type II and type IIIA, IIIB open fractures of tibial shaft as compared to normal saline soaked gauze dressings. (Rawal Med J 2013;38: 382-384).

Key words: Vacuum Assisted Closure (VAC), Gustilo classifiction, open fractures.

INTRODUCTION

Open leg fracture is common problem in our country.[1] The Vacuum-Assisted Closure (VAC) Therapy system is a newer treatment modality for wound care and was introduced in 1997.[2] VAC is a wound management technique that exposes wound bed to negative pressure by way of a closed system.[3] This has been found to be effective for chronic open wounds like diabetic ulcers, acute and traumatic wounds, flaps and grafts and dehisced wounds.[4]

VAC therapy facilitates rapid granulation of wounds and reduces bacterial colonization rates.[5] It has effects on microscopic, molecular and macroscopic tissue levels. It decreases interstitial fluid, exudates and edema. Its affects on wound perfusion, protease profiles, growth factor, cytokine expression and cellular activity, all leading to enhanced granulation tissue formation and improved wound-healing parameters.[6] In VAC technique a continuous negative pressure at 125 mm Hg or suction force is applied across the wound via a drainage tube embedded in the foam. The aim of this study was to compare the VAC therapy as against normal saline dressing in Gustilo type II and type IIIA, IIIB open tibia shaft fractures.

METHODOLOGY

This comparative study was carried out in the Department of Orthopaedics, POFs Hospital, Wah Cantt, Pakistan from March 2010 to March 2012 and included a total of 50 patients with Gustilo type II and type IIIA, IIIB Open tibial fracture. Open tibial fracture Gustilo type I, IIIC, gun shot injuries and contraindications for wound VAC use were excluded.

Patients were randomized into two groups, A and B, each group comprising of 25 patients. Every alternate patient was assigned for either VAC therapy or saline dressing**.** After taking Informed consent, group A patients were subjected to VAC therapy and Group B patients to normal saline dressings. Both VAC and saline soaked dressing were changed 3 days a week. Wounds were measured at each dressing change.

All patients received irrigation, sharp debridement, tetanus prophylaxis and empirical systemic antibiotics against staphylococci before instituting VAC therapy and normal saline dressing. We

applied continuous negative pressure of 125 mm of mercury with our ward suction machine mounted on wall. Time taken for wound healing was noted in number of days i.e. appearance of 100% granulation tissue over wound in both VAC therapy and saline dressing.

SPSS version 16 was used for data analysis. Chi-square test was applied for comparison between two groups by days of healing. P-value less than 0.05 taken as significant.

RESULTS

The age of the patients ranged between 10-40 years. 68% were male and 32% females in group A, 72% were males and 28% were females in group B. Most common wound size was 6-7.5 cm in group A and 6-7.5 cm in group B (Table 1).

Table 1. Wound size in two groups.

Group		Number	Percent
A	2.5-5cm	7	28.0
	6-7.5cm	13	52.0
	7.6-10cm	5	20.0
	Total	25	100.0
B	2.5-5cm	10	40.0
	6-7.5cm	11	44.0
	7.6-10cm	4	16.0
	Total	25	100.0

Table 3. Time of wound healing in two groups.

Group		Number	Percent
A	upper 1/3	3	12.0
	middle 1/3	10	40.0
	lower 1/3	12	48.0
	Total	25	100.0
B	upper 1/3	4	16.0
	middle 1/3	8	32.0
	lower 1/3	13	52.0
	Total	25	100.0

Location of wound was mostly on mid shaft tibia in group A and on lower 1/3in group B (Table 2).

Table 3. Time of wound healing in two groups.

Group		Frequency	Percent
A	10-20 days	21	84.0
	21-30 days	4	16.0
	Total	25	100.0
B	10-20 days	1	4.0
	21-30 days	12	48.0
	31-40 days	12	48.0
	Total	25	100.0

Wound healing time was maximum of 10-20 days in group A, and 31-40 days in group B (Table 3). P value was significant in the favor of VAC group.

DISCUSSION

Vacuum-assisted closure has been effective for traumatic extremity wounds. Herscovici et al reported the use of VAC in high-energy extremity wounds and average length of treatment was 19.3 days.[7] They concluded that VAC may avoid the need for free tissue transfer in some patients, but that it does not eliminate the need for formal operative debridement. In type III open tibial shaft fractures in pediatric patients, there was a 50% decrease in the need for flap coverage and need for major soft tissue coverage in acute type III tibia fractures.[8]

It has been reported that VAC decreases interstitial edema and increases capillary blood flow. Localized negative pressure removes fluid from the wound and promotes the formation of granulation tissue, which is required for wound closure. Furthermore, it reduces wound surface area by the traction force of negative pressure, which increases mitosis of tissue around the wound.[9]

In a prospective, randomized, clinical study, Mouës et al observed that VAC therapy was more effective in the management of infected wounds, caused a faster reduction of wound surface area and faster formation of red granulation tissue within the wound than the conventional dressings.[10] Blume PA et al in a multicentric randomized control trial showed that a greater proportion of foot ulcers achieved complete ulcer closure with VAC than with Advanced Moist wound Therapy (AMWT).[11]

One of the potential deficits in our study was comparison of VAC with normal saline gauze dressings; which is conventional method used for centuries. New mediums such as alginates and hydrogels have shown greater efficacy than normal saline dressings. So a comparison between these agents and VAC would have been a better protocol in current wound management strategies. Another problem with the study is the potential for performance bias, because the VAC device setup is a large device set up and markedly different from moistened gauze. We used a modified form with suction drain as vacuum device mounted on wall instead of device from Kinetic Concepts Inc. (KCI, San Antonio, Texas), which is quiet expensive and thus, results might not be standardized in comparison to KCI device.

CONCLUSION

This study proved that VAC therapy was more effective than normal saline soaked gauze dressings in healing of type II ,IIIA and IIIB tibia wounds. The results of this study will help us in establishing that healing rate is more rapid in VAC as compared to normal saline dressings and it will help healthcare professionals for using the better option.

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Original Article

Prevalence of the flat foot in 6-10 years old school going children

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Objective: To determine the prevalence of the flat foot in 6-10 years old school going children.

Methodology: A cross sectional study was conducted on school childrenof 6-10 years age (class one to fifth) in six schools of the Rawalpindi/Islamabad and included 714 children. After doing physical examination, special tests for flat foot were done. Data was analyzed on SPSS 19.

Results: There Out of 714 children, there were 512 males and 202 females. The prevalence of flat foot was 14.8% (n=106). Bilateral (76.4%) involvement was more than unilateral (23.6%). Prevalence of flexible flat foot was ten times more than rigid flat foot having a ratio of 9:1. All rigid flat foot cases were symptomatic and flexible flat foot cases are asymptomatic. The prevalence was more in children who were physically inactive;while physically active children had a very well developed medial longitudinal arch.

Conclusion: The prevalence of flat foot was 14.8% with more bilateral involvement. Our study showed that physical activity was directly proportional to the development of the medial longitudinal arch. (Rawal Med J 2013;38:385-387).

Key words: Flat foot, children,longitudinal arch.

INTRODUCTION

Hind foot, mid foot and fore foot are the major parts of foot. The foot supports the body weight and provides the leverage for walking and running. Arch is a segmental elevation of the foot. Human foot consists of three arches; Medial longitudinal arch (MLA), Lateral longitudinal arch (LLA) and Transverse arch.[1] Flat foot is a condition in which the foot does not have a normal medial longitudinal arch when standing.[2] When foot is dorsiflexed, abducted and everted at the same time is known as pronated foot.[3] Flat foot is classified as Pediatric flat foot (mainly congenital) and Adult flat foot (mainly acquired). Pediatric flat foot is mostly bilateral. Adult or acquired flat foot is secondary to disease, injury, unusual prolonged stress or due to aging process.[4] Flat feet are consider normal in early childhood and that the condition resolves spontaneously and most childrenbecome structurally normal when they are 12 or 13 years old.[5-7] Flat foot will occur when there is any abnormality in supporting structure of the MLA like bone ligament muscle/tendon.[8] Flat foot can lead to heel pain, bunions,hammertoes, shin splints and even knee,hip or back pain.[9] Adults with acquired flat foot may develop severe arthritis in the foot and ankle.[10] In most cases, conservative treatment is effective where as in some cases surgical intervention is required.[11]

METHODOLOGY

This study included 714 school children,between the age of 6-10 (class 1 to 5) from the six schools of Rawalpindi/Islamabad, Pakistan. Three school children belonged to middle and lower-class families while in other three schools childrens belonged to upper class. The study duration was from 1st January to 1st march 2012. We sent official letters to all schools and after their permission, we examined the children and collected data using questionnaire.This questionnaire had three parts; subjective history, objective history and examination.

Diagnosis of the flat foot was made on the basis of clinical examination of the foot and special tests (arch on loading verses arch on unloading).If this test showed the collapsing of the arch than we proceeded to the 'toe standing test'. On the basis of this test, we diagnosed the rigid or flexible flatfoot. Symptomatic and asymptomatic flatfoot was also differentiated and the unilateral or bilateral involvement was noted.After the collection of the data, the children who were diagnosed with the flatfoot were referred to the orthopedic surgeon for

further evaluation. The data were entered into SPSS19 for analysis.

RESULTS

Out of 106 children 72 (67.9%) were male and 34 (32.1%) female(male to female ratio 2:0.9).Mean age was 8.15±1.33 years.106 (14.8%) children had flat foot. Bilateral involvement was seen in 81 (76.4%) and unilateral in 25 (23.6%) children. 95 (89.6%) children had flexible flat foot and 11 (10.4%) had rigid flat foot.

Table 1. Site, grade, symptoms and associated deformities(n = 106).

Characteristic	Number	%
Site		
Unilateral	25	23.6
Bilateral	81	76.4
Mobility		
Flexible	95	89.6
Rigid	11	10.4
Grade		
Grade1	21	20.0
Grade2	38	36.0
Grade3	47	44.0
Accompanying Symptoms		
No	0	0
Yes	106	100
Heel condition		
Neutral	102	96.6
Varus	01	1.2
Valgum	03	2.2
Associated deformities		
In knee		
No	82	77.3
Genu varum	09	8.4
Genu valgum	15	14.3
Other Congenital defects		
No	105	99.0
Yes	1	1.0

All the children who are flat foot were asymptomatic. Flat foot is associated with deformities in the knee joint in nearly 22.7% and congenital defect in only 1 case. Site, grade, symptoms and associated deformities are shown in Table 1.

DISCUSSION

Our study showed a prevalence of flat foot that was more than the Saudi Arabian male recruits.[11]This difference is due to theage, which plays an important role in the development of the MLA. In children, mostly the development of the MLA starts between the age of 2 to 3 years or when child start walking/weight bearing on foot. This completes at the age of 6 year in physically active children. While in case of physically inactive children, the fat pad dissolve slowly and foot appear as a flat, mostly flexible.

That's why our study had higher prevalence then Saudi Arabian recruits who had fully dissolved fat pad of the foot. Secondly, our diagnosis was based on the physical examination of the foot, ankle and some special test for flat foot rather than radiological or laboratory test based diagnosis. The Saudi study of 2100 army recruits aged from 18 to 21 years had prevalence of flat foot of 5 percent and a family history, wearing shoes during childhood, urban life style, obesity, physical inactivity were significantly associated with flat foot.[12]

A study of 2300 children (1237 boys and 1063 girls) from 4 to 13 years in four kannada speaking and 2 from English speaking schools, out of 2300 children 1555 children worn shoes while 745 never used shoes. All the children in English speaking school used footwear while the 50.7% of children's of kannada speaking school did not use foot wear.The incidence among the children who uses shoes was 8.6% and in children who did not use shoes was 2.8%. Thus, there is significant difference between the shoe wearing and non-shoe wearing childrens.Shoe wearing in early childhood is important determinant in the development of the normal MLA.[12]

CONCLUSIONS

The present study showed that the prevalence of flat foot in school children of 6 to 10 years age was 14.8% and flat foot was more common in male then female child and bilateral involvement was more frequent. All rigid flat foot cases were symptomatic and flexible flat foot cases were asymptomatic. The prevalence was more in children who were physically inactive.

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Original Article

Operative cancellations of thoracic surgical procedures: Benefits and Concerns

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Objective: To determine causes of cancellations of daily elective listed operations of thoracic division at our institute.

Methods: This retrospective study included 491 patients, of both genders, aged 14-69years, classified in terms of the American society of anesthesiologists (ASA) as class I-III and scheduled for various thoracic surgical interventions at King Hussein Medical Centre fromApril2011 to May 2012. Patients were evaluated for causes of cancellations and assessed for statistical significance regarding surgical or anesthetic impact.

Results: Of total of12748 surgical interventions during the study period, 491cases (3.85%) were listed for thoracic surgical interventions. Forty four patients (8.96%) were cancelled. Anesthetist causes of cancellations were responsible for 50%, while surgeon related causes of cancellations were responsible for 22.7% cancellations. Respiratory causes were the least frequent causes (0.02%) of these 44 cases.

Conclusions: Causes of cancellations in our division were attributed to medical and anesthesia issues in equal in incidence with least frequent being respiratory problems. Recognition of the frequent causes for postponement of operations will enhance theatre use by anticipating these issues and to find solutions to overcome obstacles. (Rawal Med J 2013;38:388-392).

Key words: Thoracic surgery, cancellation.

INTRODUCTION

Postponements of programmed surgical procedures at the last minute area serious problem in most hospitals and a major factor of inefficient handling of theatre time and a loss of resources. There is significant impact of postponement on patients and on the increased level of emotional engagement before operation.[1] This can result in prolonging the duration of admission and induce dissatisfaction for patients and their relatives.[2] Cancellation caused extra cost for the hospital and the patients.[3] Postponed operations are not suitable for patients, doctors and staff, causing reduced patient comfort, medical confidence and prolonged hospital stay and could affect the clinical outcome. Theaim of our study was to evaluate the reasons of cancellations in our thoracic surgical division so as to overcome these obstacles and to create regulations to help in proper use of theater time.

METHODOLOGY

Our retrospective study included 491 subjects, aged 14-69 years, ASA I-III, of both genders and who were to undergo different elective thoracic surgical procedures at KHMC, Amman, Jordan from April 2011 to May2012.Anelective surgical intervention was defined as that assigned in the daily-published operating theatre list. Demographic data (age, gender, preoperative diagnosis and surgical intervention) were recorded for all subjects. Beginning time of intervention, patient's arrival time in the operating room, finish time and the causes for postponements in each patient was noted. Data on interventions assigned for weekdays excluding public holidays were obtained from the operating room list for that day which is prepared at 3:00 PM the previous day of surgery. Patient were admitted one day before surgery with complete medical and clinical investigation from clinic and complicated cases were admitted 3days prior to procedure to complete investigations and preparation for surgery. All cases were evaluated by anesthesiologist at operating theater. Emergency surgeries were performed in an emergency theatre.

Table 1. Argo criteria for cancellation.

Case	Reason
Patient	Not found. Patient refusal Preoperative instruction not followed
Facility	Administration error, Equipment malfunction Staff shortage, No time, No postop. ICU bed
Medical workup	Inadequate cardiovascular, pulmonary condition Inadequate procedure workup, Acute change in medical condition
Surgeon	Unavailable
Anesthetist	Unavailable
Others	Not in above categories

A cancellation on the day of intended surgery was defined as any intervention that was either assigned on the final theatre for that day or was consecutively added to the list and was not done on thatday. Duringthe day of surgery, a senior registered nurse at the holding area was recording all information about cancellations. Cancellations were divided into medical and nonmedical causes. Cancellations were classified as potentially preventable (no time) or non-preventable (patient refusal). Cancellations were classified also as patient, surgeon and anesthesiologist related. No surgical interventions were allowed at 3:00PM if the intervention was not believed to finish at 4:00PM. The collected data included the overall number of assigned cases for thoracic procedure, the number of overall cancellations and the causes of cancellations. Causes of postponements were classified into 6 categories according to Argo criteria[4] (Table1).The overallcancellation rate was defined as the total number of cancellations divided by the total number of assigned cases. Data analysis was performed using Chi-square test.

RESULTS

For 491 cancelled patients, age ranged between (14-69 years),and male gender was(48 %) while female gender was (52%), and ASAI was(56.8 %), ASAII was (20.5%)and ASAIII was(22.7%). All investigated cancelled interventions were thoracic. Medical causes of cancellation were 296(54.3%) and non-medical causes were 249(45.7%).Total thoracic surgical cancellations were 44(8.96%) of total thoracic operations (Table 2). There were 2 thoracic consultants (A and B), consultant (A) had (68.2%)of total thoracic cancellations and the consultant (B)had (31.8%).This difference was significant between consultants ($P<0.05$). Consultant (A) had 260 thoracic operations while the consultant (B) had 231operations. Regarding rate of cancelations to their number of operations, consultant (A) had (50%) cancellations and consultant (B) had (50%) cancellations ($P>0.05$) (Table3).

Table 2. Cancelled thoracicoperativeprocedures (n=44).

Cancelled procedure	Number
VAT lungbiopsy	5
VAT mediastinal biopsy	5
VAT bilateralsympathectomy	2
VAT pleural biopsy	3
VAT pleurodesis	1
VAT exploration	1
VAthoracoscopy	2
VAT decortications	2
VAT mass excision	1
VATesophagealdiverticulectomy	1
Thoracotomy for pneumonectomy	1
Thoracotomy for lobectomy	1
Thoracotomy for bullectomy	1
Mediastinoscopy	7
Rigid esophageoscopy	1
Rigid bronchoscopy	3
Thoracotomy for pulmonary hydatidosis	1
Laparoscopic Hiatus hernia repair	2
Laparoscopic Niessen repair for GERD	1
Chest wall mass biopsy	1
Esophagectomy	1
Removal Tracheostomy	1

Cancellations were divided into medical and non-medical causes which were equal in frequency (50%) ($P>0.05$).Non-medical causes were presented in table (Table 4).

Regarding personal cancellations, there were 12

patient causes, there were 22 anesthetist causes and there were 10 surgeon causes.

Table 3. Factors related cancellations.

Factor		Frequency
ASA	I	56.8%
	II	20.5%
	III	22.7%
Preventable		27.3%
No time		66.7%
Non preventable		72.7%
Patient refusal		12.5%
Patient		27.3%
Surgeon		22.7%
Anesthetist		50%
Consultant A		50%
Consultant B		50%

Cancellations were divided into medical and non-medical causes which were equal in frequency (50%) (P>0.05).Non-medical causes were presented in table (Table 4).

Regarding personal cancellations, there were 12 patient causes, there were 22 anesthetist causes and there were 10 surgeon causes.

Table 4. Medical and non medical factors related cancellations.

Cause	Number
Medical	
Laboratory results	3
Cardiac cause	6
Fever	2
High blood pressure	9
Respiratory problem	1
Uncontrolled diabetesmellitus	1
Non-medical	
Not found	4
Not fasting	3
Smoking	1
Patient refusal	4
No time	8
No surgical material	1
Unknown	1

Preventable causes accounted for laboratory results 3, no time 8 and no surgical material 1 in a total of 12 cases (27.3%), while non-preventable causes accounted for not found 4, not fasting 3, cardiac causes 6, smoking 1, patient refusal 4, fever 2, high blood pressure 9, unknown 1, respiratory problems 1 and uncontrolled diabetes mellitus 1 in a total of 32 cases (72.7%). No time reason was responsible equally in both consultants 50% (P>0.05).

DISCUSSION

Inourstudy, total thoracic cancellations were 8.96% which are similar to other international studies. Schofield et al showed that cardiothoracic postponement frequency was over 8% and was mostly due to facility causes (no operating time and no postoperative bed).[5]We found preventable causes in our study to be 27.3% and non preventable causes equal to72.7% of total causes of cancelation. Preventable causes were attributed to shortage of operating theater time and non preventable causes to uncontrolled hypertension and cardiac disease. This can be corrected by overcoming the preventable causes of cancellations by proper usage of operating theater time and increasing working theater days, also by increasing awareness of surgeons for the time needed to fulfill the surgical intervention as they used to under estimate it.

On the other hand, surgeon's related causes in our study were 22.7% and anesthetist related causes were50%of total cancellations. This can be attributed to improper evaluation and optimization of patients prior to surgery with lackof preoperative anesthesia evaluation as it was done on operating table. Preoperative evaluation clinics can reduce the frequency of last minute postponement for medical causes. This allows early discovery of co morbidities and permits time for pharmacological procedures, reducing expenses, morbidity and hospitaladmission.[4]

Translating the frequency of surgery postponement on the day of surgery is extremely difficult due to the range of causes: patient causes, inadequate workup and non-organized preoperative preparation. Surgeons of ten underestimate the interval period. The elective surgery postponement rate is a guide of theatre effectiveness. Lessthan5% is recommended.[6]InNew South Wales, Australia, the

rate of postponement was less than 2%,postponement due to medical causes was less than 1%.[7]Hospitals will not decrease the frequency of cancellations unless they handle every issue in the process. As failure of patients to present due to doubts and fears, solution in the USA is to charge patients for failing to present, which cannot be applicable in our region.

Surgical postponement must be considered as adverse events and monitored routinely in hospitals clinical incident monitoring system. Postponement could have deep effect on the outcome of patients regarding mortality and morbidity. Law rent schuket al had showed a high morbidity in patients who waited longer time for elective laparoscopic cholecystectomy.[8]Each hospital has its special service, staff, demographics, work pattern and culture. If the atre time is not used logically, the resources will be lost with effects on patient's care.[9]Improper utilization of theatre time could cause postponement of interventions which are expensive to patient and hospital.[10] Preventablereasons for cancellations can be reduced for the good usage of theatre time.[11]

Inadequate preoperative preparation has been considered as a major reason for postponement. This problem can be decreased by keeping good communication between anesthetist and surgeon. This issue was the cause of delay and not cancellation in other study.[12] The average expenses of theatre time is 175 US dollars per hour. This is ahugeinte rest for hospital administration.[12] The most important limitation of this study is that it was retrospective.

CONCLUSION

Causes of cancellations in our division were attributed to medical and non-medical issues. Thoracic surgery cancellation causes and anesthesiologist related reasons were equal in incidence with least frequent to respiratory problems. Recognition of the frequent causes for postponement of operations will enhance theatre use by anticipating those issues and may help in finding solutions to this problem.

RECOMMENDATIONS

Proper pre admission evaluation of medical condition of patients scheduled for operation and proper pre operative anesthesiologist evaluation by means creation of anesthesia pr operative clinic may be helpful. Proper communication with patients to show importance of time to follow pre operative regulations should be done. Proper communication between surgeons and anesthesiologist with the support of administration can improve this situation considerably.

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Original Article

Association of lactation with postmenopausal low bone mineral density

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Objective: Objective of the study was to determine association of lactation done during reproductive years of life on postmenopausal bone mineral density.

Methodology: Study was conducted at Combined Military Hospital Rawalpindi for six months. It's a case control study. Non probability sampling technique was used. Sample size of 200 comprising of 100 cases and 100 controls were taken. Bone mineral density on DXA scan was used as an outcome measure.

Results: Mean age of participants was 50 years with standard deviation of 0.78. Mean age of menopause was 47.7 years with SD ± 2.22 and mean years since menopause were 7.8 years with SD ± 4.6. Cases and control were matched for age, age of menopause, years since menopause, parity, body mass index and socioeconomic conditions. Lactation was performed by 84% (168) women. Calcium supplements were used by 44.5% (89) women during pregnancy and lactation. Odds ratio for lactation and bone mineral density is 1.16 and for calcium supplement intake and bone mineral density is 0.58.

Conclusion: In our study we conclude that performing lactation during reproductive years of life does not put women on increased risk of developing low bone mineral density after menopause. (Rawal Med J 2013;38: 393-396).

Key words: Lactation, low mineral density, postmenopausal women.

INTRODUCTION

Low bone mineral density is a major health problem in postmenopausal females.[1] Estimated prevalence of low bone mineral density worldwide is around 56 million people.[2] Prevalence of low bone mineral density increases with increasing age ranging from 5% at 59 years to 50 % at 80 years of age.[3] Low bone mineral density results in increased risk of fractures. These fractures are associated with 3 % mortality. Billions of dollars are spent every year on treatment of low bone mineral density related fractures.[4]

Modifiable risk factors associated with postmenopausal low mineral density are physical inactivity, low calcium and vitamin intake, tobacco smoking, low body mass index and excessive alcohol consumption. Fixed risk factors associated with postmenopausal low mineral density are family history and genetics, old age, female sex and other medical conditions.[5, 6, 7] One of the important predicting factor for postmenopausal low bone mineral density in females is decreased peak bone mass. Peak bone mass is achieved between 20 to 40 years of age and that is also period of maximum fertility in women.[8] Lactation is a burden on body's calcium resources. Breast feeding requires 300-400 mg of calcium daily.[9] This results in low peak bone mass which is a predictor of low bone mineral density after menopause.[8] This fear of bone loss has resulted in increasing trend of bottle feeding.[10] This study will find truth behind this misconception. Our hypothesis was that lactation decreases peak bone mass during reproductive life and cause low mineral density after menopause. Objective of the study was to determine association of lactation done during reproductive years of life with postmenopausal low mineral density.

METHODOLOGY

It was a case control study conducted at Gynae and

Obs Department of Combined Military Hospital Rawalpindi. Duration of study was six months from 10 July 2012 to 09 December 2012. Sample size of 200 was taken comprising 100 cases and 100 controls. 100 cases of postmenopausal women with low bone mineral density were selected by non probability consecutive sampling and 100 postmenopausal women with normal bone mineral density were selected as controls.

Low bone mineral density was defined as T-score less than – 1 on DEXA scan. Lactation was defined as performance of breastfeeding for 1 to 2 years. Body mass index was considered normal between 18-23 kg/m^2. A monthly income less than RS 20,000 was grouped as low socioeconomic, between RS 20,000 and 100,000 as middle socioeconomic group and above 100,000 as high socioeconomic group. Increasing age is an independent risk factor for low mineral density so; we included only postmenopausal females of less than 60 years of age. All females with history of confounding factors like previous fractures or endocrine abnormalities and prolong physical inactivity were excluded from study. All participants were informed about inclusion in the study, its benefits and potential risk factors of radiation with DEXA scan. Detailed history and examination was carried out on all participants. DEXA scan was done to measure bone mineral density. Data regarding age, menopause, years since menopause, lactation, duration of lactation, socioeconomic status, history of calcium supplements intake, body mass index and bone mineral density was recorded on a profroma. SPSS version 17 was used to analyze data. Mean and standard deviation was calculated. Odds ratio was measured to calculate association of lactation and intake of calcium supplements with bone mineral density in postmenopausal women.

RESULTS

Total 200 postmenopausal women were included in our study. Mean age of presentation was 50 years with standard deviation of ± 0.78 (Graph 1).

Fig. 1. Age groups in cases and controls.

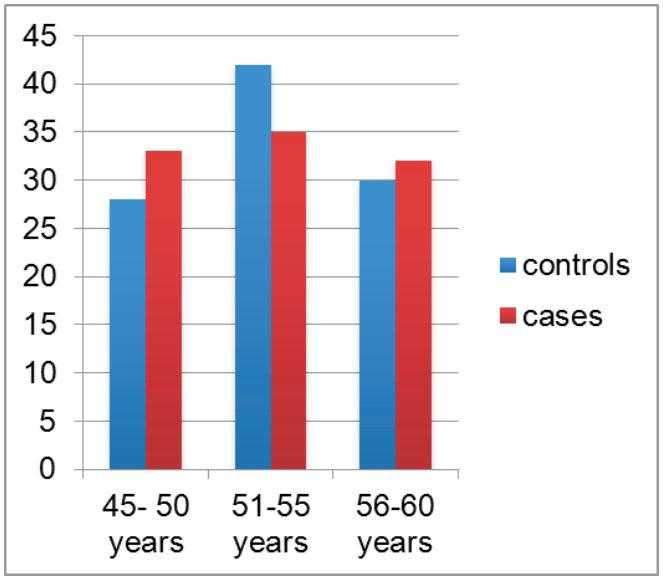

Table 1. Baseline characteristics of cases and controls

Character	Cases (n=100)	Controls (n=100)
Age (years)	50 ± 0.81	50 ± 0.76
Menopause (years)	47.72 ± 2.01	47.49 ± 2.38
Years since menopause	8.3 ± 4.4	7.04 ± 4.8
Parity	3.02 ± 1.39	2.1 ± 0.98
Low Socioeconomic group	48%	61%
Middle Socioeconomic group	39%	29%
High Socioeconomic group	13%	10%

Mean age of menopause was 47.7 years with SD of ± 2.22 and mean years since menopause were 7.8 years with SD of 4.6. Cases and controls were match able regarding age, menopause, years since menopause, parity, socioeconomic conditions (Table 1) and body mass index (Table 2).

Table 2. Body mass index in cases and controls.

BMI	Cases (n=100)		Controls (n=100)	
	Number	Percentage	Number	Percentage
Less than 18	17	17.0	17	17.0
18 – 23	27	27.0	32	32.0
24 – 28	39	39.0	30	30.0
> 28	17	17.0	21	21.0
Total	100	100.0	100	100.0

Lactation was performed by 84% (168) women.

Table 3. Association of lactation and calcium supplement intake with bone mineral density.

Factor	Low mineral density (n=200)		OR
Lactation	Cases (n=100)	Controls (n=100)	
Yes	85	83	
No	15	17	**1.16**
Calcium supplements intake	Low (Cases) n= 100	Normal (Controls) n=100	
Yes	38	51	**0.58**
No	62	49	

There is a weak association of lactation with low bone mineral density and a protective effect of calcium supplement intake on bone mineral density

Calcium supplements were used by 44.5% (89) women during pregnancy and lactation. An odds ratio for lactation and bone mineral density was 1.16 and for calcium supplement intake and bone mineral density is 0.58 (Table 3).

DISCUSSION

Our study showed that postmenopausal females who have performed lactation during their fertile life had no significant risk of developing low mineral density as compared to women who did not perform lactation. Literature has contrasting views on this subject. Selma Yazici et al showed in their study that changes of bone metabolism during lactation had no effect on postmenopausal bone mineral density (BMD) measured by DXA scan.[11] A population-based study conducted in Srilanka inferred that multiparity or prolonged breast-feeding had no detrimental effects on maternal BMD in post-menopausal women.[12] Some studies have reported negative correlation of lactation with bone mineral density. [13, 14] Dursun et al. in 1480 postmenopausal females found increased frequency of osteoporosis with longer duration of lactation.[15] Mean age for menopause in our study was same as in local studies.[16]

Milk production during lactation needs 200-400 mg extra calcium daily.[17] This results in 3–9% decrease in bone mineral density at the spine and hip. [18, 19] Rate of bone loss in hip and spine is high in first to 6 months of lactation. Bone loss after pregnancy is related more with pospartum amenorrhoea than duration of breast feeding.[20] Loss of calcium from body, decrease in serum estradiol levels and increase in parathyroid related proteins results in this bone loss.[21] Calcitonin plays an important role in preventing excessive resorbtion of skeleton during lactation.[22] Bone loss during lactation is transient.[23] This loss recovers as aggressively in next 3 to 6 months as it was lost.[24] Mechanism for this remarkable recovery is not fully understood. At the end of lactation oscteoclasts are deactivated and osteoblasts are activated. Osteocytic lacunes are laid down in bones. This recovery is almost complete. [25, 26, 27, 28]

Breast milk is an infant's natural diet. WHO and UNICEF have promoted lactation both for benefit of mother and child.[29] Despite efforts trend of breastfeeding is declining especially in working ladies.[10] This study will help in promoting breastfeeding. This is a case control study and has recall bias.

CONCLUSION

In our study we conclude that performing lactation during reproductive years of life does not put women on increased risk of developing low bone mineral density after menopause.

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Original Article

Role of Laparoscopy in the diagnosis of chronic pelvic pain

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Objective: To evaluate the cause of chronic pelvic pain in women with diagnostic laparoscopy.

Methodology: This Prospective descriptivestudy was conducted in Ghulam Mohammad Mahar Medical College Hospital and Hira Medical Centre, Sukkur, Pakistan, during a period of two years from May 2011 to April 2013. It included 63 patients presenting with chronic pelvic pain for more than six months duration. Women with chronic pelvic pain who had pelvic pathological lesions detected on clinical and or ultrasound examination were excluded. All were assessed by pelvic examination and pelvic ultrasonography and a C.T scan, if indicated. Patients were evaluated for other causes of pain like gastrointestinal, urological and musculoskeletal, before diagnostic laparoscopy was performed. Clinical, ultrasonographic and laparoscopic data was collected and analyzed using SPSS v. 14.

Results: Patients age ranged between 26-35 years. Most of these women were married (90.47%) and nulliparous (50.79%).On laparoscopic examination, pathological lesions were detected in 52(82.53%) patients while 11(17.46%) patients had negative laparoscopy and were re-evaluated for other causes of pain.Out of 52 positive laparoscopies, tuberculosis was found in 17(26.98%), pelvic inflammatory disease (PID)in 13(20.63%), endometriosis in 9(14.28%), pelvic adhesions in6 (9.52%), benign ovarian cysts in 5(7.93%) and polycystic ovarian disease in 2(3.17%) patients.

Conclusion: Laparoscopy is a useful diagnostic tool for women with chronic pelvic pain and can be used as a guideline for individualized treatment. (Rawal Med J 2013;38:397-400).

Keywords: Diagnostic laparoscopy, chronic pelvic pain, pelvic tuberculosis, endometriosis, P.I.D.

INTRODUCTION

Chronic pelvic pain is defined as a noncyclic constant or intermittent pain of greater than six months duration and not completely relieved by medical treatment. It is one of the commonest symptomatology in gynecology outpatient clinics. It accounts for 10% of office visits to gynecologists and general clinics.[1] Prevalencehas been reported as 3.8% in women aged 15-73 years.[2] In primary care practices, 39% of women complain of pelvic pain.[3] The cause of pain is not always obvious as no pathology is seen in 40-60% of cases.[4] Diagnostic laparoscopy is the gold standard to evaluate the underlying pathology and can establish a definitive diagnosis and modify the treatment without resorting to exploratory laparotomy.[5] The rationale of the study was to detect the underlying pathology of such a complex perplexing problem (CPP) in a day-to-day practice, with the help of laparoscopy, when ultrasound findings are normal and patient is not responding to medical therapy.

METHODOLOGY

It was a prospective descriptive study, conducted in the department of gynecology and surgeryGhulam Muhammad Mahar Medical College Hospital and Hira Medical Centre Sukkur, Pakistan, during a period of two years from May 2011 to April 2013.A total of 63 patients were selected for diagnostic laparoscopy, presenting with chronic pelvic pain for more than six months duration fromoutpatient department(OPD) of surgery, gynecology and medicine. All the patients with no obvious organic pelvic pathology on clinical or ultrasound examination and not responding to medical treatment were included in the study. Patients with previous hysterectomy, previous multiple

surgeries and with organic pelvic pathological lesions, orthopedic injury, musculoskeletal and psychological causes detected clinically and or radiologically were excluded from the study. Informed written consent was taken from all patients.

The demographic data, clinical examination, routine investigations and fitness for general anesthesia were recorded. Diagnostic laparoscopy was performed with standard technique by infra-umbilical 5mm port for 30^0 telescope and another one or two 5mm ipsilateral working ports, as required. Biopsy was taken in majority of the cases. Tuberculosis was confirmed on histopathology and anti-tuberculosis therapy (ATT) started. Pelvic collection/ pus was drained and irrigation done with normal saline. Pelvic adhesions distorting the tubes were treated by sharp dissection. Adhesiolysis was also done for bowel adhesions. Cyst wall puncture, de-roofing and or excision of benign ovarian cysts were done. Drilling was done in patients with polycystic ovarian disease. In six patients, hysterectomy was carried out for persistent pelvic pain with P.I.D six months after laparoscopy. The data was collected and analysed on SPSS version 14.

RESULTS

Age of patients ranged from 26-35 years. 90.47% were married and 50.79 % were nulliparous (Table 1). Pain was dull and sharp in majority of the patients (42.85%). Other commonly associated symptoms were infertility in 35 (55.55%), dyspareunia in 34(53.96%), dysmenorrhea in 33 (52.38%) and backache in 32 (50.79%) patients (Table 2).

Table 1. Socio-demographic features of the study group (n=63).

Demographic features	Numbers	Percentage
Age group(years)		
a. 16-25	03	(4.76%)
b. 26-35	40	(63.49)
c. 36-45	20	(31.7%)
Marital Status		
a. Married	57	(90.47%)
b. Unmarried	06	(9.52%)
Parity		
a. Nulliparous	32	(50.79%)
b. Multiparous	31	(49.2%)

Pathological lesions were detected in 52 (82.53%) patients while 11(17.46%) patients had negative laparoscopy. Out of 52 positive laparoscopies, tuberculosis and pelvic inflammatory disease were commonest diagnosis (Table 3).

Table 2. Symptomatology of the study group (n=63).

Clinical presentation	Numbers	Percentage
Type of pain		
a. Dull ache	13	20.63%
b. Dull and sharp	29	46.03
c. Severe episodic pain	11	17.46%
d. Non-specified	10	15.87%
Infertility		
a. Present	35	55.55%
b. Absent	28	44.44%
Dyspareunia		
a. Absent	34	53.96%
b. Present	29	46.03%
Dysmenorrhea		
a. Present	33	52.38%
b. Absent	30	47.61%
Backache		
a. Absent	32	50.79%
b. Present	31	49.2%

Biopsy confirmed intestinal and genital tuberculosis in 17(26.98%) patients. Biopsy also confirmed endometriosis in 9(14.28%) patients. Adhesiolysis was done for bowel adhesions and distorted fallopian tube adhesions, successfully with minimal bleeding. No iatrogenic gut or other visceral injury occurred.

Table 3.Laparoscopic findings (n=63).

Laparoscopic findings	umber	Percentage
Normal	11	17.46%
Abnormal	52	82.53%
i. Tuberculosis	17	26.98%
ii. Ovarian Pathology	05	7.93%
iii. Pelvic inflammatory disease	13 09	20.63% 14.28%
iv. Endometriosis	06	9.52%
v. Pelvic adhesion	02	3.17%
vi. Polycystic ovarian disease		

Two (3.17%) patients developed post-operative collection, which was drained by ultrasound-guided aspiration. Deep endometrioses were treated by electrosurgical excision successfully. Benign ovarian cysts were removed successfully and drilling was done in polycystic ovarian syndrome with no complications. Post-operative recovery was

uneventful in all patients. Follow-up was done in 90% of cases up to 1 year, while 10% patients were lost to follow up. No morbidity or mortality occurred in the study group.

DISCUSSION

Laparoscopy is a useful diagnostic tool to detect or exclude underlying pathology especially when the imaging modalities are not helpful.[6,7]Chronic pelvic pain has a myriad of possible causes, mostly with very little correlation between clinical evidence and the extent of disease and the quality, quantity or appearance of pain. Patients with chronic pelvic pain have often visited several physicians, used alternative methods of care and may have used narcotic analgesics.Chronic pelvic pain sometimes can be thought of as a puzzle that requires careful evaluation.[8] Laparoscopy often helps to establish the cause of pelvic pain and in many cases can be used to treat the cause as well.[9] Studies have shown that 40% of laparoscopies are performed for the diagnosis of chronic pelvic pain.[10]

In our study, abnormal laparoscopic findings were observed in 82.53% patients whereas 17.46% patients had normal examination. Kontoravdiset al[11]laparoscopically assessed 1629 patients with chronic pelvic pain and detected abnormal pathology in 76%. Mara et al[12] performed 480 laparoscopies in patients with chronic pelvic pain and pathology was detected in 82.3%. Swanton et al[13] did laparoscopy with conscious pain mapping in 39 women and identified the cause of pain in 35(90%). In our study, the frequent pathological conditions observed were tuberculosis (26.98%), PID (20.63%), endometriosis (14.28%), pelvic adhesions (9.52%) and benign ovarian cysts (7.93%).

The diagnosis of peritoneal tuberculosis could be a demanding task for even an experienced physician because of non-specific symptoms.[14]According to the WHO global tuberculosis control 2009, Pakistan ranks 8th on the list of 22 high tuberculosis burden countries.[15]Laparoscopy is an effective tool for the diagnosis of pelvic tuberculosis. It can reveal peritubal adhesions, tubercles on the tubes, gut serosa, omentum and peritoneum, small tubo-ovarian masses and hydrosalpinx that cannot be detected clinically or on ultrasound.

In this study, PID was diagnosed in 20.63% patients, which is comparatively less than other western studies where PID is more common.[16]Endometriosis is a growing health care problem all over the world.[17] Pelvic endometriosis is the most common laparoscopic finding in patients with chronic pelvic pain.[18,19-22] The prevalence of endometriosis that was detected in laparoscopy is 20.4-22.3%.[12,23] Some studies report confirmation of suspected endometriosis during diagnostic laparoscopy in 78-84% of patients.[24] However, in the present study endometriosis was the third most common cause of chronic pelvic pain, found in 14.28% patients. The incidence of endometriosis is very low in someparts of Nepal (4.7%),[25]which may be due to early child bearing and prolonged breast feeding. Pelvic adhesions were observed in 9.52% cases in this study. Drozgyik et al on laparoscopy on 1061 patients with chronic pelvic pain reported 32.5% patients with pelvic adhesions.[23] Ovarian cyst rarely causes chronic pelvic pain, only 7.93% cases were found in the present study.

Thus, the use of laparoscopy allows the detection of potentially treatable pathology not detected or detectable by other types of evaluation such as ultrasonography, imaging studies, endoscopy and other laboratory studies.[26] Diagnostic laparoscopy has an influence in discarding unnecessary medication and introducing therapeutic plans.[18,27]

CONCLUSION

Laparoscopy has a vital role in the diagnosis and management of patients with chronic pelvic pain. In properly selected patients, it resulted in significant symptomatic improvement.

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Original Article

Clinical significance of uterine scar tenderness in predicting strength of scar in patients with lower segment cesarean section

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Objective: To determine the clinical significance of uterine scar tenderness in predicting strength of scar in patients with lower segment cesarean section (LSCS).

Methodology: The descriptive study was conducted at Cantonment General Hospital Rawalpindi from 1st January 2012 to 31st January 2013.All pregnant women who had one or more cesarean section were included in the study. Patients with unknown site of uterine scar were excluded. All patients undergoing repeat LSCS were assessed for scar tenderness and divided into two groups on the basis of whether scar tenderness was positive or not. The findings were noted on a Performa. Operative findings were noted during surgery. Outcome variables included thinned out lower segment, scar dehiscence and scar rupture.

Results: The sensitivity and specificity of uterine scar tenderness was 86.3 percent and 86.0 percent, respectively. Positive predictive value and negative predictive value was 51.3 percent and 97.3 percent, respectively.

Conclusion: Uterine scar tenderness was found to be a useful tool in predicting strength of scar in woman undergoing LSCS. (Rawal Med J 2013;38:401-403).

Key words: VBAC, TOLAC, scar tenderness, scar thickness.

INTRODUCTION

Rising cesarean section (CS) rate is a global concern. Internationally,CS rates vary from 10-30 percent. In our region,around 10 percent of the obstetric population has a CS scar.[1,2]Cesarean section on maternal request and repeat cesarean delivery are the most prominent avoidable causes of rising CS rate.[2,3]Vaginal birth after CS is one of the target foci to check the rising CS rate. Success rate of vaginal birth after CS varies from 60-80%.[3]Relative safety of vaginal birth after CS has been well established.[4-7] However, vaginal birth after CS has the inherent risk of scar rupture, which is a catastrophic event associated with feto-maternal morbidity and sometimes mortality.

Various attempts have been made to anticipate scar rupture. These include use of obstetric risk assessment before trial of scar, use of continuous electronic fetal heart rate monitoring and use of intrauterine pressure monitoring during labour.[8,9]Another approach is the use of ultrasound assessment of uterine scar in the antenatal period.[10,11] Abnormal cardiotocograph is the most consistent finding of impending scar rupture, present in 80% of women with scar rupture.[1]

Clinical features of scar rupture include maternal tachycardia, severe abdominal pain persisting between contractions, scar tenderness and abnormal vaginal bleeding.Late signs include cessation of uterine activity, hematuria,loss of station of presenting part and maternal shock.[9]The importance of determining the predictive value of clinical features for rupture of uterine scar is immense. Among all the features listed above, scar tenderness may be a telltale sign of scar rupture in labor. Although scar tenderness is routinely assessed in every woman undergoing trial of labor after CS, very few studies have been conducted to evaluate it scientifically. The purpose of our study was to evaluate the utility of scar tenderness in anticipating scar complications.

METHODOLOGY

The descriptive study was conducted at Cantonment General Hospital, Rawalpindi from January 1, 2012 to January 31, 2013 using convenience-sampling

technique. All pregnant women who had one or more previous CS were included in the study. Women with unknown site of uterine scar were excluded from the study. Approval of the Hospital Ethics Committee and an informed consent was obtained.

All women undergoing LSCS, whether emergency or elective, were assessed for scar tenderness. Women undergoing elective surgery had the assessment done immediately before the procedure. car tenderness was checked every 30 minutes in patients undergoing trial of scar. A senior registrar conducted the examination. Scar tenderness was checked by superficial palpation of the lower uterine segment by pressing the pelvis above pubic symphysis in the absence of a uterine contraction. Diversion technique was used to remove bias. A visible wince was regarded as a positive sign.

In those undergoing trial of scar, regular monitoring was done including observation of maternal pulse, blood pressure, scar tenderness and vaginal bleeding. Fetal heart rate was auscultated every 30 minutes in the first stage and after every contraction in the second stage. Continuous fetal heart rate monitoring was instituted, as required. Positive scar tenderness, unexplained maternal tachycardia, fresh vaginal bleeding, fetal heart rate abnormalities and failure to progress were considered indications for emergency CS. The women who had a successful vaginal birth were excluded from the study.

Women were divided into two groups on the basis of whether scar tenderness was positive or not. Operative findings were noted during surgery. Scar rupture was defined as per operative finding of a communication between uterine and abdominal cavity. Dehiscence was defined as a defect in lower uterine segment with or without bulging membranes. Thinned out lower segment was defined as a thickness of lower uterine segment less than5mm.

RESULTS

One hundred fifty one women had a repeat CS during the study. Mean age of the women was 27.6±4.265 years. Mean gestational age was 37±1.670 weeks. Scar tenderness was positive in group one, which included 37 (24.5%) women. Rest of the 114 (75.4%) women constituted group two in whom scar tenderness was negative. Demographic data is shown in Table 1.

Table 1. Demographic data.

	Age	Gravidity	Parity	Gestational age
Number	41	41	41	41
Mean±SD	27.61±4.26	2.98±1.10	1.71±0.84	37.63±1.67

In group one, 8 (21.6%) patients had thinned out lower uterine segment, 9 (24.3%) had scar dehiscence and 2 (5.4%) had uterine scar rupture. In group two, thinned out lower segment was noted in one (0.87%) and scar dehiscence was noted in two (1.7%) patients (Table 2). There was no scar rupture in group two.

Table 2. Relationship of scar tenderness with scar rupture.

		Scar rupture		
		Yes	No	Total
Scar tenderness	Yes	2	35	37
	No	0	4	4
Total		2	39	41

The estimated value of prevalence was 14.5% (95% confidence interval 0.095-0.21). The sensitivity was 86.3% and specificity was 86.0 %. False positives were 48.6% and false negatives were 2.6%. Positive predictive value was 51.3% and negative predictive value was 97.3%.

DISCUSSION

Scar tenderness is an easily electable sign which appears early. In low resource settings where continuous electronic fetal heart rate monitoring is not available, it becomes even more useful. In our study, we found that scar tenderness had good sensitivity and specificity. Although the positive predictive value was low, the negative predictive value was 97.3%

There is a multitude of studies on trial of scar. But there is a scarcity of data on the predictive value of

scar tenderness. Gaikwad et al reported sensitivity and specificity of scar tendernessto be 92.3% and 8.3%, respectively.[1]Their reported specificity was very low as compared to our study. The possible reason was that women who were false negative for scar tenderness were not included in the study.

There are fewstudies, which deal with scar tenderness as one of the reasons for failure of trial of scar. In a study of women with scar tenderness, two out of 10 had scar complications.[2]Puri et al reported scar tenderness in 12 women out of 205 and among these 12 women, four had intraoperative scar dehiscence.[12]In another study, 3 cases of scar tenderness were found out of 120 women and only one had ruptured uterus at CS.[13]A retrospective study of 99 women found scar tenderness in one woman while one case of scar dehiscence did not have scar tenderness.[14]Some women were false negative for scar tenderness in a trial of labor following CS. [15]

Our study on scar tenderness included both false positives as well as false negatives and thus described the positive and negative predictive values for the first time. One of the drawbacks of the study was that other clinical features apart from scar tenderness were not taken into account. More studies are needed to evaluate the significance of each clinical feature in predicting scar complications.

CONCLUSION

Uterine scar tenderness was found to be a useful predictor of complications in a trial of scar. More studies are needed on a larger cohort to establish the clinical utility of these findings.

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Original Article

B-Lynch suture in the management of massive post partum hemorrhage

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Objective: To determine the efficacy of B-lynch suture in the management of massive PPH.

Methodology: This case series study was conducted at Department of Obstetrics and Gynecology, Civil Hospital, Karachi. Thirty-five patients presenting with excessive bleeding after delivery were included. A detailed history and examination was carried out, relevant investigations were done and patients were treated conservatively. In patients with intractable primary PPH unresponsive to conservative management, B-lynch suture was applied.

Results: Out of 35 patients, B-lynch suture was successful 83%. Effectiveness of procedure was higher in 25-35 years of age of women while this was less effective in above 35 years of the age i.e. 71.4%. Similarly, effectiveness was 80% and above 80% in booked and unbooked cases, respectively while in referral cases this was 50%. Effectiveness of procedure was also similar in multipara in grand multipara women.

Conclusion: B-lynch brace suture technique was successful in 83% of cases while failure rate is only 17%. There were no intra-operative complications and few postoperative complications. In our experience, this technique is a safe, highly effective and easy method to stop bleeding in massive primary PPH. It is alternative to hysterectomy, especially in young women whose obstetric career otherwise prematurely and involuntarily ends. (Rawal Med J 2013;38:404-408).

Key words: Postpartum hemorrhage, B-lynch compression suture, uterine atony.

INTRODUCTION

At the start of new millennium, Pakistan still faced a critical position regarding maternal health, maternal mortality is a sensitive indicator of inequality, for the year 2001-2002,MMR as reported by UNICEF in our country is 327-1300/100,00 live birth[1]. The status of maternal health is also poor in Pakistan like other developing countries .Obstetric hemorrhage, eclampsia and Puerperal sepsis are the major reported direct causes of maternal mortality in Pakistan as well as in other parts of globe[1] Post-partum hemorrhage is an acute obstetrical emergency that remains the commonest cause of maternal deaths (25 -43%) in the under developed countries[2,3]. Each year about Fourteen million cases of PPH occur with a case fatality rate of 1% [4]. In the UK it accounts for over one third of all maternal deaths and according to confidential enquiry into maternal and child health of 2000-2002, this make it the second most common cause of maternal mortality. It is top most common cause of maternal morbidity and mortality in pakistan[5].This striking number of death from PPH in the triennium was noted, similar rates were noted in most recent confidential inquiry (2004-2006) in the 2004 the its incidence was 3.2 per 1000 births and in 2005 it is 4.5 per 1000 births.[4] Its prevalence is quite high due to lack of proper antenatal care, unsupervised labor, anemia, grand multiparity and associated medical problems. Recognition of the above risk factors will allow the obstetric team to anticipate and prepare for appropriate management in most patients. The initial management is essential to prevent the consequences of pph like hypovolemic shock, coagulopathy and multi organ failure[6].uterine atony is commonest cause of pph other causes includes genital tract trauma, morbid adherent placenta, coagulopathy, uterine inversion and ruptured uterus.[7]PPH secondary to uterine atony is generally controlled by uterine massage, oxytocic agents and bimanual compression. If these methods fail to stop the hemorrhage, surgical procedure such as B-Lynch suture, devascularization procedure(bilateral ligation of uterine arteries ,ovarian arteries and internal iliac arteries) embolization of uterine arteries and hysterectomy have been proposed[8].

Bilateral ligation of internal iliac arteries for control of major PPH has been the first line of procedure, but it is not effective in all cases[9]. It is technically difficult and require highly skilled surgeon. Other procedure like selective arterial embolization may be effective but it requires the services of international radiologist, besides having drawback of post procedural pain[10]. Caesarean hysterectomy seems to be the last resort in many circumstances with the natural consequence of increases maternal morbidity and loss of fertility. Recently B – Lynch suture technique is highly successful in management of massive primary pph resulting from uterine atony where other conventional methods fail to control the bleeding. The potential candidates for this technique are those patients where bimanual compression of the uterus markedly decreases the bleeding.[11]The only problem is the need for hysterectomy if this procedure is unsuccessful. Most gynecologists are familiar with the name of the B-Lynch suture but have no practical experience with it.Moreover such type of study has been conducted in Punjab but no such study has been conducted in Sindh. Our study will provide recent local data on the basis of which management strategy would be differed.

METHODOLOGY

This was a case series study conducted over a period of 6 months at Gynae and obstetrics unit ii civil hospital Karachi. During the study period 35 patients with massive post-partum hemorrhage who did not respond to medical measures like oxytocin 10(i.u) intravenously, Oxytocin 40(I.u) in 500ml 0.9% saline infusion in 4 hours, Methylergometrine 500mg, Prostaglandin F2 (alpha) 250ug repeated every 15 minutes maximum dose 2mg were include and the patients excluded from the study were those Patients who do have massive post-partum hemorrhage & responding to medical measures, patients suffering from disseminated intravascular coagulopathy and Lower genital tract lacerations. B-lynch suture technique using chromic catgut No. 2 was applied to all patients who were presented with massive pph and fulfills the inclusion criteria .Data will be filled in pre-set Proforma and entered and analyzed in statistical software SPSS (Ver-10). Frequency and percentage were computed for categorical variables like age groups, parity, booking status, duration of marriage, gestational age and rate of success and failure of B-lynch suture technique. Mean, standard deviation, 95% confidence interval, median, inter quartile range and minimum and maximum observation were computed for age, duration of marriage, parity, gestational age, pulse, systolic and diastolic blood pressure, respiratory rate and estimated blood loss. Stratification was done to control effect modifier like age, booking status, gestational age, parity, duration of marriage to observe an effectiveness of B-lynch suture.

RESULTS

During the study period thirty five patients with massive post-partum hemorrhage were included in this study to observe the effectiveness of B-Lynch suture. Twenty one (60%) patients were below 31 years of age, 7(20%) were between 31 to 35 years of age and 7(20%) were above 35 years of age as presented in table 1. Booking status, parity, gestational age and duration of marriage is shown in table 1. The average age of the patients was 31.60 ± 3.95years (95%CI: 30.24 to 32.96). Similarly average gestational age, parity and duration of marriage were 38.42 ± 1.18 weeks, 4.44±2.0 and 9.25±4.5 years of the women respectively (table ii). Average pulse, systolic and diastolic blood pressure, respiratory rate and estimated blood loss of the patients are presented in table iii. Effectiveness of b-lynch suture in control of massive post-operative hemorrhage is presented in figure 1. Success rate of the procedure was 83% and failure was 17%. Effectiveness of procedure was higher in 25 to 35 years of age of women while this was less effectiveness in above 35 years of age that is 71.4% as shown in table 3. This is might be because of rapid involution of uterus on subsequent days which decresses the compression effects in older age group these patients bleeds continusly required internal iliac artery ligation and hysterectomy. Similarly effectiveness of procedure was 80% and above 80% in booked and unbooked cases

respectively while in referral cases this was observed in 50%.theses cases are referred from primary health care facilities and some cases are self referred they bleeds massively and developed low grade DIC. as presented in table IV. Effectiveness of procedure was also similar in multipara, primipara and grand multipara women (table IV)

Table 1. Descriptive statistics of study variable (n=35).

Variables	Number	Percentage
Age		
• 20-35 year	21	60%
• 31-35 year	7	20%
• >35 year	7	20%
Booking status		
• Booked	05	14.3%
• Un booked	26	74.3%
• Referral	04	11.4%
Parity		
• 0-1	05	14.3%
• 2-5	18	51.4%
• >5	12	34.3%
Gestational age		
• < 38 week	07	20 %
• 38-39 week	21	60 %
• 40-41 week	07	20 %

Table 2. Descriptive Statistics of study variables (n=35).

Variables	Mean ± SD	95%CI	Median	(IQR) Max-Min
Age (Years)	31.60± 3.95	30.24 to 32.96	30(5)	40 – 25
Gestational Age (Weeks)	38.42± 1.18	37.99 to 38.85	38(1)	41 – 35
Parity (no. of children)	4.44± 2.0	3.72 to 5.16	4.5(4)	8 - 1

Table 3. Effectiveness of B-Lynch Sutures Procedure (n=35).

Variable.	Number	Effectiveness of B-lynch suture Successful	failure
Age in years			
• 25-30	21	17(81%)	4(19%)
• 31-35	07	7(100%)	0%
• 36-40	07	5(71%)	2(28%)
Booking status			
• Booked	5	4(80%)	1(20%)
• Un booked	26	23(88%)	3(11.5%)
• referral	4	2(50%)	2(50%)
Parity			
• 0-1	5	4(80%)	1(20%)
• 2-5	18	15(83.3%)	3(16.6%)
• >5	12	10(83.3)	2(16.6%)
Gestation Age (Weeks)			
• < 37	7	5(71.4)	2(28.6%)
• 38-39	21	18(85.7%)	3 (14.3%)
• 40-41	12	6(85.7%)	1 (14.3%)

Table 4. Descriptive statistics of study variables (n=35).

Variables	Mean + SD	95%CI	Median (IQR)	Max-Min
Pulse (b/Min)	92.74± 18.48	86.29 to 99.18	90(9)	140 - 60
SBP (mmHg)	101.62± 17.86	95.38 to 107.85	100(10)	140 – 50
DBP (mmHg)	63.38± 12.45	59.03 to 67.74	60(10)	100 – 40
Respiratory Rate (b.p.m)	19.29± 4.58	17.69 to 20.89	18(2)	40 – 10
Estimated Blood Loss (ml)	1556± 487	1380 to 1732	1600(275)	2500 - 550

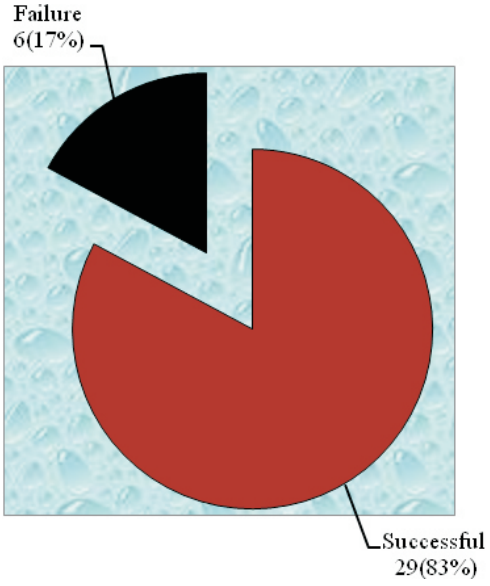

Figure 1. Effectiveness of B-lynch suture in control of massive PPH (n=35).

B-lynch suture procedure is considered failure if pulse > 90 b/min, BP <110/50 mmHg, Respiratory rate >bpm and urinary output <40.

DISCUSSION

Post-partum hemorrhage is an acute obstetrical emergency[2, 3] which accounts for 25 – 43% of all maternal deaths in developing countries.[4, 5] Five percent of vagina births are complicated by postpartum hemorrhage with a blood loss of more than 1000 ml.[2, 3] most common cause of primary PPH is uterine atony the risk factors for uterine atony includes emergency C-section, antepartum hemorrhage, previous history of PPH, multiple pregnancy, fetal macrosomia , prolong or augmented labor, prolong third stage of labor,nulliparity,and obesity .[3] It is usually managed by uterotonic agents such as oxytocin infusion ,ergometrine and prostaglandins but in some cases surgery may be required .[12] surgical interventions included caesarean hysterectomy and/or devascularization procedures . Caesarean hysterectomy is a definitive treatment of pph to save the life of mother especially in those cases where the patient is hemodynamically unstable. Its main disadvantages are future infertility, iatrogenic menopause and high postoperative morbidity. Devascularization procedures (bilateral internal iliac or uterine artery ligation) and uterine artery embolization may be used as alternative surgical methods but these techniques requires expertise and they are difficult to perform, sometime facilities for such procedures are not available in the emergency situations[1]. Recently Christopher B - Lynch (1997) introduces a suture that compress the uterus that was highly successful in the management of life threatening massive primary post-partum hemorrhage where medical treatment fails to arrest the bleeding .The only disadvantage is the need for hysterectomy if fails to arrest the bleeding .[14] In current study the average age of the patients was 31.60 ±3.95 years (95%CI: 30.24 to 32.96). A study from UK reported the similar mean age 31 years and the success rate of the procedure (B-Lynch suture) was 83% and failure was 17%. Effectiveness of procedure was higher in 25 to 35 years of age. These results are comparable to the results of Dr. Lynch case report[2] and the case reports of Syeda Batool Mazhar,[15] where no serious complication was found after application of this stitch. A study from UK reported the success rate of B-Lynch suture was 72% for small sample size of 11 women with Massive PPH.[16] A study from Lahore reported the high success rate of procedure, 97.8% out of 45 women with PPH.[6] Results of this study are comparable with the study from Faisalabad, in which the success rate was 87.5%.[17] high success rate was also reported from India 97.3% out of 75 women.[18] From this study I can say that the introduction of the B-lynch brace suturing technique has definitive role in the management of major life threatening hemorrhage as an alternative to hysterectomy and has great advantage in young patient with restoration of future fertility. B-Lynch brace suture application should only be applied if bimanual compression decreased the amount of bleeding by abdominal and perineal inspection. B-lynch et.al reported two out of five women had subsequent normal deliveries. There is concerns of anatomic damage of uterus due to extreme compression by this technique, follow up of few women showed no uterine defects which might be secondary to rapid involution lessening the suture tension on each postpartum day. This technique is easy to learn and can be also quickly performed and in my opinion the procedure should be belong the standard armamentarium of the practicing obstetrician, especially in primi gravida whose obstetric career otherwise prematurely and involuntarily end.

CONCLUSION

Our study concludes that B-lynch brace suture technique is highly successful in 83% of cases while failure rate is only 17%. There were no intra-operative complications and few postoperative complications. In our experience this technique is a safe, highly effective and easy method to stop the bleeding in massive primary PPH due to uterine atony. It is alternative to hysterectomy especially in young women with restoration of future fertility whose obstetric career otherwise prematurely and involuntarily ends.