Vol. 16, No. 1
ORIGINAL PAPER

GENERAL SURGERY

MEDICAL CHANNEL
JANUARY - MARCH 2010

MOLONEY DARN REPAIR: VERSUS LICHENSTIEN MESH REPAIR COMPARISON OF COST EFFECTIVENESS & COMPLICATIONS

1. **IMAMUDDIN BALOCH**
FCPS
2. **SHER MUHAMMAD SHAIKH**
FCPS
3. **YASMEEN BHATTI**
FCPS
4. **GHULAM SHABIR SHAIKH**
FCPS
5. **RAJIB ALI DEENARI**
M.S

1. ***Assistant Professor,***
Surgery Unit-II
CHANDKA MEDICAL COLLEGE & HOSPITAL, LARKANA.
2. ***Professor,***
Surgery Unit-II
CHANDKA MEDICAL COLLEGE & HOSPITAL, LARKANA
3. ***Assistant Professor,***
Surgery Unit-II
CHANDKA MEDICAL COLLEGE & HOSPITAL, LARKANA.
4. ***Associate Professor,***
Surgery Unit-II
CHANDKA MEDICAL COLLEGE & HOSPITAL, LARKANA.
5. ***Assistant Professor,***
Surgery Unit-II
CHANDKA MEDICAL COLLEGE & HOSPITAL, LARKANA.

CORRESPONDENCE:
DR. IMAMUDDIN BALOCH
Assistant Professor Surgery,
Surgical Unit-II,
CHANDKA MEDICAL COLLEGE HOSPITAL, LARKANA, SINDH.
Phone: 074- 4058929
Cell#: 0300-3421003
Email: imam_b1966@yahoo.com

ABSTRACT:

OBJECTIVES: *To share our experience of inguinal hernia repair with Moloney Darn (MDR) and Lichtenstien mesh repair (LMH) with respect to their cost effectiveness and by comparing the frequency of complications.*
PLACE AND DURATION OF STUDY: *This prospective study was conducted at Surgical Unit Ii Chandka Medical College Hospital, Larkana from March 2007 to Nov 2008 for a period of 21 months. Included patients presented for elective hernia repair.*
SUBJECTS AND METHODS: *200 patients suffering from symptomatic inguinal hernia were admitted. 100 patients (group A) operated for Lichtenstien mesh repair and 100 patients (group B) by Moloney Darn repair. We evaluated and compared analgesic requirement, operative time, hospital stay, cost, early postoperative complications, time until return to work, and recurrence. Those presenting with strangulated or obstructed inguinal hernia as well as recurrent hernia were excluded from the study.*
RESULTS: *Among 200 patients. Majority of the patients were between the age of 40 to 60 years. In both groups analgesic requirement ranges as NSAID 3-4 doses and 3-5 doses with 1-2 and 1-3 doses of sedative analgesic like pentazocine respectively in both groups. So in Group B averagely 1-2 doses of NSAID and 1 dose of sedative analgesia are more required. Conversely, the mean operative time in group A was 53.57 minutes, and 48.69 minutes in group B .Postoperative hospital stay was slightly shorter in group B. Early postoperative complication rates and the time until return to work did not differ significantly between the two groups. During follow-up, recurrences rate is 1(1%) case in each group. The cost of Darn repair (group B) was significantly less than that of mesh repair (group A).*
CONCLUSIONS: *Both LMH and MDR resulted in less complication rapid recovery and same recurrence rates; however, the advantage of the MDR lies in the fact that it does not require mesh, so it is much more cost effective.*

KEY WORDS: Lichtenstien mesh repair (LMH), moloney darn repair (MDR), inguinal hernia

INTRODUCTION

Inguinal hernia is the most common type of hernia, comprising of approximately 75% of all anterior abdominal wall hernias.[1]
Surgery is indicated in many to prevent complications.[2] Fortunately, most inguinal hernias are repaired electively to prevent strangulation.[3,4] Inguinal hernia repair is the most common operation undertaken in routine surgical practice with an annual incidence of 13 per 1000 population of all ages.[5] Several methods have been developed over the years to try to improve the traditional methods of hernia repair.[6] The most important recent innovations made in 1986 is by Lichtenstein[7] who described the tension free repair using a polypropylene mesh for reinforcement of the posterior wall and the Laparoscopic mesh repair is becoming popular in recent days [8,9].These patients must be thoroughly evaluated before hernia repair [10]. The darn repair originally described by Moloney et al. is an other effective technique for repairing inguinal hernia.[11] Better results are obtained with Lichenstein (mesh) repair including recurrence rates as low as none to 0.4% have been reported in international and local literature [12,13]. Because of poor socioeconomic status, non-affordability of patients and non-availability of mesh in small cities, in this study Darn technique was chosen to ascertain its effectiveness, postoperative complications and recurrence by comparing it with Lichenstein (mesh) repair. The aim of this trial was to determine any key benefit from using the mesh as

opposed to the more commonly used Moloney Darn repair.

PATIENTS AND METHODS

This prospective comparative study was conducted at surgical ward II of CMC Teaching Hospital Larkana on 200 male patients who were admitted through OPD.

Inclusion criteria:

Male patients with age group between 20 -80 years reducible direct & indirect inguinal hernia.

Exclusion criteria:

Patients under 20 years of age above 80 years with recurrent, obstructed or strangulated inguinal hernia having co-morbidities like, chronic cough & cardiac problem and female patients.

Each patient was thoroughly assessed by detail history, clinical examination & required investigations. Details of symptomatology were recorded in a specially designed proforma. These patients were randomly divided in to two equal groups i-e group A (100 patients), group B (100 patients). Same surgeon has operated all the cases after taking consent from each patient. Time taken by surgeon from making incision & placing last stitch was recorded, along with anatomical type of hernias & any on table complication. Three doses of prophylactic antibiotics (caphradine 1gm) were given. 1st dose at induction of anaesthesia, 2nd dose after 8 hours & 3rd dose next morning. Post operatively; need of analgesics, type of analgesics were recorded along with dose & frequency. Immediate post operative complications were also noted.

At the time of discharge all the patients were advised to visit surgical OPD for weekly follow-up upto 06 weeks. Then after 03, 06, and 12 months respectively. The patients were instructed to report immediately if any complication, like fever, wound pain, swelling of wound or discharge is being noted by them. They were all advised to start their routine physical work as soon as they consider themselves fit. They were instructed to note the day and date of starting routine work. The stitches were removed between 8-9 days. At each visit, brief history was taken, and physical examination including local examination of wound or scar was done for the evidence of wound infection, condition of scar and recurrence of hernia. Patients were especially asked about any complaints and start of routine work. Data analysis was done through SPSS 13 version by paired t-test.

TABLE NO: 01
ANALGESIC REQUIREMENT

S.NO	GROUP A			GROUP B		
	Doses	No of Cases	Percentage	Doses	No of Cases	Percentage
As a routine for mild to moderate pain Diclofenic sodium	3-5	100	100%	3-6	100	100%
For moderate to severe pain Pentazocaine	1-2	24	24%	1-3	28	28%

TABLE NO. 02
POST OPERATIVE COMPLICATIONS

S.NO	COMPLICATION	GROUP A		GROUP B	
		No of cases	percentage	No of cases	Percentage
1	Moderate to severe pain	24	24%	28	28%
2	Fever	12	12%	11	11
3	Minor wound infection	10	10%	12	12
4	Haematoma/seroma	09	09%	08	08
5	Spinal headache	06	06%	07	07
6	Neuralgia	03	03%	02	02
7	Retention of urine	11	11%	13	13%
8	Recurrence	1	1%	1	1%

RESULTS

The age distribution ranged from 20 to 80 years. (Fig 1). Mean age was 51+ 16.2 in group A & 47+ 17.3 in group B.

The Symptomatology of the patients in both groups were as under. In group A 63 (63%) patients had inguinal swelling and 37 (37%) patients with inguinoscrotal swelling, additionally 32 (32%) patients with pain, 12 (12 %) of the patient with constipation and 14 (14.%) with urinary complaints. In group B 58 (58%) patients presented with inguinal swelling and 42 (42%) patients with inguinoscrotal swelling . In addition 34 (34%) patients with pain, 09 (09%) of the patients with constipation and 08 (08%) with urinary complaints.

In group A right sided hernia was in 66 (66%) patients and left sided in 29(29%) patients, bilateral hernia 05 (5%). Indirect hernias in 63(63%), direct hernias with –ve ring occlusion test in 37(37%). In group B right sided hernia was in 62 (62%) patients and left sided in 32(32%) patients, bilateral hernia 6 (6 %) and no patient for recurrent hernia. indirect hernias in 63(63%), direct hernias with –ve ring occlusion test in 37(37%).

No specific investigation was required for diagnosis of these patients however all investigations were done for pre-operative evaluation and fitness for anesthesia and surgery. Haemoglobin ranged from 09 to 16 g% in all cases of both groups. Blood Urea was also in normal range in all cases of both groups and Blood Sugar was within normal limits except 3 cases who were labeled as diabetic in group B, their blood sugar was controlled and procedure done. X-ray chest was normal in all cases of both groups. All cases were operated under spinal anesthesia. Except 4 cases who were ineffectively blocked, required some form of general anesthesia.

The operative time in Group-A ranged from 45-to 65 minutes where as in Group - B ranged from 40 to 60 minutes. Mean operative time was in group A 53.57 minutes SD+ 6.8. Mean age operative time 48.69SD+ 5.87in group B.

Regarding analgesic requirement (Table No: 01). The total number of doses of different analgesics were counted from the time of operation till discharge of the patient from hospital.

The complications (TABLE. 02) which

occurred post operatively in mesh repair (Group - A) were found in the form of post operative pain of average severity in 100 (100%) while moderate to severe pain requiring sedative analgesics pentazocine were 24%, fever in 12 (12%) patients, wound infection, 10 (10%) cases, scrotal haematoma /seroma 09 (09%) cases which were treated conservatively or with single aspiration. Whereas postoperative complications seen in darn repair (Group - B) were as 100 (100%) patients complained of pain of average intensity while, moderate to severe pain requiring sedative analgesics pentazocine were 28 (28%), 11 (11%) patients developed fever, 12 (12%) patients had wound infection, and 08 (08%) cases scrotal haematoma /seroma which were treated either with conservative treatment or with single aspiration, 07 cases (07%) of post spinal headache. Postoperative fever was noted from 1st postoperative day in 12% & 11% of the patients in groups A & B respectively & they were managed by giving antipyretic drugs. Postoperative wound infections of minor variety were noted in both groups, at the incision site in both open mesh and darn repair. They were treated with antibiotics accordingly. Retention of urine was noted in 11(11%) and 13(13%) of patients in groups A and B respectively.

The period of hospital stay in mesh repair (Group - A) ranged from 2-5 days mean 3.6 days + 1.10 sd, while hospital stay in Group - B ranged from 2-6 days mean 4 .2days + 1.34 sd.

The period of return to normal activity in mesh repair ranged from 15-28 days mean 21.58 days + 3.7 sd. Where as period of return to the normal activity in Darn repair ranged from 17-28 days mean 22.58 days + 3.04 sd p value of .014.

DISCUSSION

Repair of inguinal hernia is the most common surgical procedure performed on general surgical floors. The conventional open repair relies on suture line to close the hernial defect. In recent years, the synthetic mesh has replaced the conventional method world wide (used through open or laparoscopic technique).[14] These methods are associated with rapid return to normal activities with low recurrence rates.[15,16]

The cost of using synthetic mesh is a major issue in developing countries like ours which influences over the choice of surgical procedure i-e conventional v/s mesh repair. Keeping that in view, we conducted this comparative study to see whether the open suture technique Moloney's Darn repair is a better & cost – effective alternate in our setup.

In our study the patients were randomized to two group's i-e group A: underwent mesh repair & group B: Moloney's Darn repair.

In Majority of cases hernia was right sided in our study, which is comparable to other studies.[17]

There was no statistically significant difference of early complication rate between the two groups. (e.g wound infection, haematoma formation, retention of urine). This is reflected in a study by Nisar Ali, where haemotoma formation in mesh & non mesh was 4.2 v/s 5.26%, seroma formation 3.63 v/s 3.15%, wound infection 2.42 v/s 3.15%, neuralgia 1.81 v/s 2.10%.[18]

The method of hernia repair in both groups did not affect the length of hospital stay which was 2 – 5 days in group A & 2 – 6 days in group B. This is reflected in one large randomized controlled trial by vallribera F et al. [14]

It was also reflected in our study that patients who underwent Moloney's Darn repair returned to the routine activities in almost same period as the patients with mesh repair did. Patients in either groups did not present with chronic persistent pain. This is in contrast with other studies which have compared mesh v/s non – mesh repair. The mesh repair significantly reduces the persistent pain. [19]

True hernia recurrence was found to be 1% in both mesh & moloney's Darn repair groups at the end of first year of follow-up. This is contrast with the available studies, where hernia recurrence is about 6% higher in non-mesh group. The study by Nisar Ali, comparing mesh repair with Darn recurrence rate was 1.81% in mesh repair which 3.15% in darn repair group. [18]

However short term follow-up may not show actual recurrence rate after hernia repair & it has been suggested that a minimum of 10 years follow-up is needed as 20% of recurrences will not be apparent for 15 years, so it is more likely that recurrence rates are under estimate due to lack of long term follow-up.

CONCLUSIONS

It was concluded that both Moloney Darn (MDR) and Lichtenstien mesh repair (LMH) resulted same complication; rapid recovery and same recurrence rates; however, the advantage of the MDR lies in the accepted fact that it does not require mesh, so it is much more cost effective. Long term effects beyond 1 year have not be studied. So we can say mesh repair of primary inguinal hernias is not so much superior to non-mesh repair with regard to inguinal hernia repair. Postoperative complications, pain and quality of life did not differ greatly between the two groups. There was no difference in clinical variable. Open inguinal hernia repair with a darn technique was equivalent to polypropylene mesh with respect to postoperative outcome and recurrence. Darn repair using non-absorbable suture is safe procedure. It is easily performed and has a very low recurrence rate which is comparable to any other procedure**.**

REFERENCES

1. Primatesta P, Golacre MJ. Inguinal hernia repair, incidence of elective and emergency surgery. Int J Epidemol 1996;25:835-9.
2. Mann CV, Russel RCG, William NS. (eds). Hernia in Bailey and Love, Short practice of surgery, 24th edition, London Champion Hall 2004; (ch: 73).
3. Watkin D Kirk. R Abdominal wall and groin. In: General Surgical Operations RM Kirk; 4th ed. New York: Churchill Living Stone; 2000:117-40.
4. Gallegos NC, Dawsen J, Jarvis M, et al. Risk of strangulation in groin hernia. Br J 1991;78:1171-1173.
5. Berliner SD. When is surgery necessary for groin hernias; Post grad-Med-1990;87:149-52.
6. Raftery T A. Hernias and Abdominal wall. In: Churchill's Surgery; 2nd Ed. New York: Churchill Living Stone; 2001: 196.
7. Lichtenstein IL, Shulman AG. Ambulatory outpatient hernia surgery, including new concept, introducing tension-free repair. Int Surg 1986;71:1-4.
8. Cuschieri A. Disorders of abdominal wall and peritoneal cavity. In: Cuschieri Essential Surgical Practice 4TH ed. London: Arnold (Hodder Headline Group); 2002; I: 143 - 45.
9. Lal P,Kajla RK. Laparoscopic total extraperitoneal versus open Lichtenstein inguinal hernia repair. J. Surg Enosc; 2003 June: 850 – 6.
10. Mayor-Davis-JA. Groin hernia—beware! S Afr J Surg. 1990 Mar;28(1):20
11. Moloney G : Darning in inguinal hernias .Ach.Surg.1972;104:129.
12. Khan Z, Gardezi JR. Lichtenstein tension-free Hernioplasty: an audit. Pak J Surg 2004;20:16-9.
13. Gourgiotis S, Germanos S, Stratopoulos C, Moustafellos P, Panteli A. Lichtenstein tension-free repair of inguinal hernia. Chirurgia (Bucur). 2006;101:509-12.
14. EU Hernia Trialists Collaboration. Repair of groin hernia with synthetic mesh: meta-analysis of randomized controlled trials. Ann Surg. 2002; 235(3):322-332.
15. EU Hernia Trialists Collaboration. Mesh compared with non-mesh methods of open groin hernia repair: systematic review of randomized controlled trials. Br j Surg 2000;87:854-9.

16. EU Hernia Trialists Collaboration. Laparoscopic compared with open methods of groin hernia repair: systematic review of randomized controlled trials. Br j Surg 2000;87:860-7.
17. Vallribera F, Oms LM, Gimenez M, et al. groin hernia repair: comparison of three open techniques. Br J Surg 1997; Supplement II:84.
18. Ali N, Israr M, Isman M. recurrence after primary inguinal hernia repair: mesh versus darn. Pak J Surg. 2008;24(3):153-155.
19. Sutton AJ, Abrams KR, Jones DR, et al. Systematic reviews of trails and other studies. Health Technol Assess 1998; 2:19.