TENSION-FREE MESH HERNIOPLASTY; A REVIEW OF 96 CASES

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ABSTRACT

Objective: To record the experience of a non-hernia specialist general surgeon with the Tension Free Mesh Hernioplasty.

Material and Methods: Of the total, 67 (70%) cases were performed under local anaesthesia; the remaining 29 (30%) had general anaesthesia. This is a prospective study of 96 men that underwent the Lichtenstein Tension-free mesh hernioplasty, from February 1997 to February 2000, a total period of three years. The study was conducted at the surgical department of Khyber Teaching Hospital.

Results: After a minimum follow-up period of 2 years, not a single recurrence was noted. The overall sepsis rate was 3%, and residual neuralgia was recorded in 2% cases. No prosthesis required removal.

Conclusion: The study confirms the safety and efficacy of the TFM Hernioplasty as a treatment modality for inguinal hernias. Furthermore the study also reveals the fact that similar results to those reported by the Lichtenstein Clinic can be reproduced in the hands of the "real world" of general surgeons.

Key words: Inguinal Hernia, Tension Free Mesh Repair.

INTRODUCTION

The estimated incidence of inguinal hernia is 10-15%. Many exist in the community undiagnosed, undetected, and unreported.[1] Thus inguinal hernia are a major economic problem. Despite the frequency of surgical repair, "perfect results" continue to elude surgeons and the rate of surgical failure (recurrence) is humbling.[2] Today, overall recurrence is far from satisfactory, and varies between 10-30%.[3] Good results are reported by dedicated herniologists, those of the "real world" of the general surgical community are much less satisfactory. True recurrence rate in general hospitals are probably underestimated. For the

foreseeable future, hernia surgery is a procedure likely to be delegated to non-consultant staff and trainee surgeons. Recurrence, the ultimate nightmare of a hernia surgeon adds significantly to health care costs and pose a further economic burden. Sir Henage Ogilvie stated, "I know more than a hundred surgeons whom I would cheerfully allow to remove my gallbladder but only one to whom I should like to expose my inguinal canal." Berliner noted that follow-up of hernia is notoriously difficult; the dissatisfied patient will seek medical services elsewhere.[4]

"Total" absence of tension on the suture line is the "sine qua non" for a sound repair. Recurrences in general are almost invariably located in juxtaposition to the public tubercle or the internal ring, because of highest tension at these points. Recurrence of course is more common with direct hernias. All modifications of anterior tissue repairs have shared one common disadvantage: SUTURE LINE TENSION! So is the tension-free mesh hernioplasty the best repair?

MATERIAL AND METHODS

This is a prospective study of 96 men who underwent the Lichtenstein's tension-free mesh hernioplasty from February 1997 to February 2000, a total period of 3 years. The study was conducted in the surgical department of Khyber Teaching Hospital, Peshawar, Pakistan. The mean age was 58 years (range, 21- 81 years). There were 42 (43.5%) right-sided hernias operated on, and 37 (38.5%) left sided hernias. The remaining 17 (18%) were bilateral. Exclusion criteria were: recurrent hernias, females, and those who couldn't procure or afford the mesh. 67 (70%) had local anaesthesia, whereas the remaining 29 (30%) had general anaesthesia. The exclusion criteria for local anaesthesia were very obese men, those with very large hernias (Gilbert, indirect type-111) and finally patients who for one reason or another refused local anaesthesia (Number 17, 18%). Simultaneous or sequential repairs for bilateral hernias were not carried out because of the theoretical possibility of increased pain, increased chance of infection, micturation problems, lignocaine toxicity, and increased chance of subsequent femoral hernias. The following Gilbert type[14] hernias were recorded (table no. 1):

PRESENTATION ACCORDING TO GILBERT'S CLASSIFICATION

Type	Number	Percentage
Indirect Type 1	16	16.7
Indirect Type 11	32	33.3
Indirect Type 111	18	18.7
Direct Type 1V	21	21.9
Direct Type V	09	9.3

TABLE – 1

The operative technique employed was the technique described by Lichtenstein et al.[15] The mesh used was either Prolene or Mersilene, and put down with 2/0 prolene. It is important to keep the mesh slightly relaxed and not taut to compensate for the increased intra-abdominal pressure when the patient stands up and to compensate for the inevitable future shrinkage of approximately 20%[16]. In addition, failure to cross the tails of the mesh lateral to the internal ring is another source of recurrence. Figure no. 1, shows the final position of the mesh in a left sided hernioplasty.

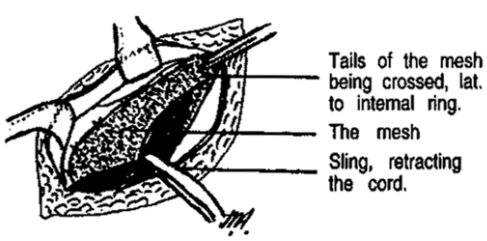

Figure No. 1

All patients were given a single dose of Cefotaxime Sodium 1gm I /V on induction, as antibiotic prophylaxis. Thereafter oral Augmentin in a dose of 1 gm twice daily was given for 3 days. Early mobility was strongly encouraged, as cultural attitudes towards surgery in our setting are a gloomy affair warranting days and days of strict bed rest. All patients were urged to attend follow-up at 6 weeks, 3 months, one year, and two years post surgery. Earlier of course, if they noticed a recurrence or had any related problems.

RESULTS

The average operating time was 38 minutes (range 31-65), and the mean postoperative stay was 26 hours (range 8-96). Most patients required only a single parenteral dose of tramadol for postoperative pain. The following operative findings were recorded:

Indirect hernia	59 (61%)
Direct hernia	35 (37%)
Pantaloon hernia	02 (02%)

The following complications were noted (table no. 2)

[illegible]	[illegible]	[illegible]
Acute urinary retention	03	03
Deep wound infection	03	03
Cord induration	02	02
Residual neuralgia	02	02
Wound Haematoma	01	01
Postoperative hydrocoele	01	01

TABLE – 2

No cases of ischaemic orchitis, testicular atrophy, or DVT were seen. No prosthesis required removal. The overall morbidity was 12%. It was also discerned from this study that the vast majority of the patients were fit to have the operation under local anaesthesia. Most of the cases were satisfied with the outcome of their surgery, most reporting an earlier return to work compared to their counterparts that had had other tissue repairs. There was not a single case of recurrence noted after a minimum follow-up of 2 years.

DISCUSSION

The main reason for the repair of inguinal hernia remaining a problem is the wide discrepancy between the monotonous excellence achieved in personal series and the uniformly depressing results obtained by impersonal statistical reviews.....yet impersonal reviews indicate that the recurrence rate remain excessively high and fairly constant whatever method and material is employed.[8] A hernia repaired under tension is doomed to failure.

Astley P. Coopers oft quoted statement of 1804 is still pertinent, "no disease of the human body, belonging to the province of surgeons requires in its treatment a greater combination of accurate anatomical knowledge with surgical skill than hernia in all its varieties."[9] Human beings were architecturally designed to walk on all fores. The transversalis fascia, where uncovered is the "Achilles Heel" of the groin with no musculoaponeurotic layer, this architectural error was exposed when man in his determination to walk upright in order to feed, to fight, or for flight, created an unsupported area.[10] Most renowned former anatomists felt repairs failed because they failed to correct the defect in the deepest layer, that being the transversalis fascia. Condon, stated that this was an important point to keep in mind

when reviewing the surgical literature, as a great deal of emphasis has been placed on transversalis fascia and its role in hernia repair. Transversalis fascia is of varying density and is often quite thin, even transparent. It possesses little intrinsic strength and by itself is a worthless material as far as the construction of a sound hernia repair is concerned.[11] Since tendons are composed of very strong collageneous tissues, they should be employed exclusively rather than fascia for hernioplasty

Edoardo Bassini is credited for developing and performing the first modern hernioplasty. He had a clear insight into the anatomy and physiology of the inguinal region. His landmark series ignited the enthusiasm of surgeons worldwide.[12] Unfortunately from the very beginning surgeons misinterpreted Bassini's intent and modified and corrupted the operation.[13] To many the Bassini operation merely consists of high ligation of the sac and approximation of the conjoint tendon and the internal oblique muscle to the shelving edge of the inguinal ligament with interrupted sutures. In reality the authentic Bassini operation includes deliberate and complete dissection to expose the anatomy in its entirety, a repair in which the internal oblique muscle, the transversus abdominal muscle, and the transversalis fascia (Bassini's triple layer) were approximated to both the femoral sheath and the shelving edge of the inguinal ligament with interrupted sutures.[13] Pre-Bassini, best centers in Europe and North America reported mortality rates of 7% and recurrence rate after one year was 30-40%.[14] Bassini's astounding results earned him the name of "Father of Modern Herniorrhaphy." The period 1880 to 1890 can justifiably be termed "the decade of hernia surgery". He reported 206 cases with zero mortality and at 5 years follow-up a recurrence of only 2.7%.[15]

Besides the Bassini operation, few anterior classical repairs have stood the test of time. In 1953 Earle Shouldice modified the pristine Bassini repair with less than 1% recurrence at 10 years.[16, 17] Shouldice Clinic demonstrated the exceptional results that can be achieved by a specialist hernia center. It has become the "gold standard" worldwide, by which other hernioplasties are compared. The technique employs a 6-layer complicated double breasting or overlapping repair with monofilament stainless steel. The Shouldice procedure has been justifiably criticized because the repair is complicated and multilayered, time consuming, and most important of all it is non-anatomic. The many stitches under tension cause pain with all movements and restricts physical activity for several weeks. Randomized trials elsewhere are not as encouraging (recurrence rates of 4-10%), besides an increase in the incidence (as high as 40%) of femoral hernias has been reported following the Shouldice repair.[18] Despite its popularity in the '80s and '90s less than 20% consultant surgeons were employing this technique in the U.K.[19]

About 25 years ago Irving Lichtenstein challenged the concept of both the darn technique and the Shouldice operation. He emphasized the lack of logic in repairing a hernia by placing together attenuated tissues not normally in apposition, under tension was a clear violation of basic surgical principles.[6] It was a revolutionary departure from the tissue repair used for the past 100 years since Bassini. This different concept developed by Lichtenstein and Shulman places a synthetic mesh without tension over the floor of the inguinal canal. The idea was similar to the steel work inside reinforced concrete. This technique has seen an impressive rise in popularity worldwide.[20] The technique gives consistently good results, is simple (to learn, reproduce and teach), much less painful, and effective, allowing prompt resumption of unrestricted physical activity. In their first 3000 cases, Lichtenstein et al reported only 4 recurrences.[7]

Prosthetic soft tissue patches have been utilized for years to reinforce classical repairs but without significantly improving results. McGavin in the UK first used silver wire filigree, Thorbjarnarson used metal sheets and gauze, but it was Usher to first use synthetic polymers.[21, 22,23]

A bewildering proliferation of prosthetic techniques have surfaced, all having enthusiastic proponents. A mesh should handle well, incite a fibroblastic reaction, should be nondegradable, biotolerant, inert, thin, porous, nonallergenic and should integrate well.[24, 25] It should be strong and remain so, and shouldn't be felt by the patient or surgeon postoperatively. Lichtenstein uses Marlex and Prolene mesh; others available are Mersilene and Gortex. All have replaced the inconvenient biologic grafts such as autologous fascia lata. Lichtenstein described early mechanical recurrence, in the first 2 years due to suture line tension, and later metabolic recurrence due to disorders of collagen metabolism.[7] Lichtenstein reported an infection rate of less than 0.3%, so the belief that the risk of infection is high is unfounded.[26] The technique can easily be field tested in the real world with equally superb results. In a multicenter experience with TFM Hernioplasty ,a recurrence rate of under 0.8% was reported.[27] Thus the results are easily reproducible. The procedure is suitable for all hernias, and can be described as both therapeutic and prophylactic.

CONCLUSION

In the light of the results of this study (with zero percent recurrence following the Lichtenstein's tension-free mesh hernioplasty in 96 men) and a review of the immensely successful International experience with this technique, it can confidently be concluded that the TFM Hernioplasty is the repair of choice for the surgical treatment of inguinal hernia. Today it has veritably become the "gold standard" in managing all types of inguinal hernias.

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