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Experience with Lichtenstein Hernioplasty in Sagamu

Ayoade BA*, Salami BA, Nwokoro CC
Department of Surgery, Olabisi Onabanjo University Teaching Hospital, Sagamu.

Abstract
Background: Newer methods have evolved to address the major drawback of the traditional methods of hernia repair. These emphasize the use of prosthetic materials to strengthen the posterior wall of the inguinal canal without tension. Although Lichtenstein hernioplasty, like other newer methods, is associated with low recurrence rates, it is not commonly used in our clinical setting.
Objective: To review the outcome of Lichtenstein hernioplasty using polypropylene mesh in a resource-poor setting.
Methods: The hospital records of patients who had Lichtenstein hernioplasty between the year 2004 and 2013 in a six-bed private surgical clinic and who were followed up over a two- to ten-year period, were studied. Demographic data, clinical features, operative findings and outcome measures like post-operative complications and recurrence rates, were recorded.
Results: There were 62 patients (with 69 hernias) of which 2 were females with the age range of 12-84years. 50 hernias (72.5%) were of the inguinoscrotal type, 39 patients (63.0%) had right inguinal hernias, 5 (7.2%) hernias were obstructed and 8 (11.2%) hernias were recurrent. Six (9.7%) had emergency surgery, 46 (74.2%) had surgery under local infiltrations and 15 (24.2%) had spinal anaesthesia. Scrotal oedema (4.3%), haematoma (1.4%), and hydrocoele (1.4%) were the early complications recorded. One recurrence of hernia occurred in a patient who had repair of twice recurrent hernia. The mean duration of follow-up in years was 5 (S.D 2.5) years.
Conclusion: Lichtenstein repair of inguinal hernia was a safe and effective procedure in the private clinical setting.

Key words: *Hernioplasty, Inguinal hernia, Lichtenstein, Propylene mesh*

Introduction

Inguinal hernias are leading indications for surgical treatment worldwide and are associated with life threatening complications [1] The traditional methods of inguinal herniorraphy, such as the Bassinni, Mcvay, and Shouldice techniques, which employ suturing of mobilized surrounding tissues to close defects produce tension along the surrounding tissues and suture lines. These traditional methods are frequently associated with recurrence and are no longer recommended in routine elective surgery of inguinal hernias. [2, 3] The traditional methods have also been shown to give inconsistent results in non-specialist centres. [4] Therefore, new surgical techniques have evolved to address the major drawback of these traditional methods by using prosthetic materials to strengthen the posterior wall of the inguinal canal without tension. [5] Some of these modern methods include Lichtenstein hernioplasty, mesh plug technique, prolene hernia systems and laparoscopic repairs (Total extra-peritoneal repair- TEP and Transabdominal Preperitoneal repair –TAPP). [2,6,7] These tension-free mesh hernioplasty procedures are reported to be associated with low recurrence rates, less post- operative pain and faster recovery but are rarely associated with common complications such as seroma, haematoma, wound sepsis, testicular atrophy, pain, mesh migration and fistula formation. [5,8,9]

These new techniques are not yet widely used in our practice due to the high cost or non-availability of the prosthetic materials and equipment required. In addition, there is a relative lack of expertise to use some of these new techniques. The initial mesh

*
Correspondence
Department of Surgery, Olabisi Onabanjo University Teaching Hospital, Sagamu
Mobile: +2348033848122
Email: teruayoade@gmail.com

materials used at the commencement of the study in 2004 were donated by a colleague who brought them from the United States while on a six-month travel fellowship. Subsequently, it became available within Nigeria, but quite expensive. There is paucity of local data on mesh hernioplasty as the few available studies do not have sufficient long time follow up. [10,11] Therefore, the objective of the present study was to describe the outcome of Lichtenstein hernioplasty using polypropylene mesh in a resource-poor clinical setting.

Methods

The hospital records of patients who had herniorraphy done by one of the authors (ABA), between the year 2004 and 2013 in a six-bed private surgical clinic and were followed up over a two- to ten-year period, were studied. Pre-operative counselling emphasizing the need for long follow up was done.

The choice of the use of mesh for hernia repair was based solely on availability of the material at the time of surgery. The technique of repair involves the excision of the indirect hernia sac and reduction of the direct hernia sac. This is followed by the insertion of an on-lay polypropylene mesh with a lateral slit to accommodate the spermatic cord on the posterior wall of the inguinal canal. The cord is anchored in place with Nylon-2^0 interrupted stitches to the conjoint tendon and inguinal ligament (Lichtenstein).

Post-operatively, the patients were reviewed twice annually for the first two years after surgery and then yearly thereafter. Patients who defaulted were contacted by telephone or traced through the source of referral.

The demographic characteristics of the patients such as age, sex, and occupation were recorded. The presence of predisposing factors, type and side of hernia, type of anaesthesia, operative findings, duration of surgery, use of antibiotic prophylaxis, type of analgesia, postoperative complications, duration of hospital stay and follow-up were also recorded. The results were analyzed using descriptive statistics with the SPSS software package version 20. Patients with less than two years follow-up were excluded from the study.

Results

Overall, 111 hernias from 101 patients were studied; these comprised 95 (94.1%) males and 6 (5.9%) females. These 101 patients constituted 16.7% of 604 patients who had surgical operations during the study period. Only 62 patients with 69 hernias, who had mesh herniorraphy, (made up of 60 males and 2 females), were included in the analysis. Those who had other types of hernia repair were excluded from further analysis.

The age range was 12-84years with the mean of 49 (SD 18) years. Thirteen (21.0%) patients were artisans, 17 (27.4%) were farmers and 48 (77.0%) were urban dwellers (Table I).

Table I: Demographic characteristics of 62 patients with hernia

Parameters	*Frequencies*	*Percentages*
Age groups (years)		
<20	2	3.2
21-30	7	11.3
31-40	8	12.9
41-50	13	21.0
51-60	11	17.7
61-70	13	21.0
>71	8	12.9
Gender		
Male	60	96.8
Female	2	3.2
Residence		
Rural	14	23
Urban	48	77
Vocation		
Artisan	13	21.0
Businessman/Trader	10	16.1
Civil servant	3	4.8
Religious cleric	5	8.1
Driver	7	11.3
Farmer	17	27.4
Student	3	4.8
Unemployed	4	6.5

Fifty (72.5%) hernias were inguinoscrotal in type, 39 (63.0%) were right inguinal hernias 5 (7.2%) hernias were obstructed while 8 (11.2%) were recurrent (Table II). Twenty-nine (46.8%) patients were engaged in heavy manual work and 7 (11.2%) patients had co-morbidity of cardiovascular diseases (Table II).

Table II: Clinical characteristics of the 62 patients and the hernias

Parameters	*Frequencies*	*Percentages*
Types		
Bubonocoele	1	1.4
Funicular	18	26.1
Inguinoscrotal	50	72.5
Laterality		
Right	39	63.0
Left	16	25.8
Bilateral	7	11.2
Reducibility		
Reducible	58	84.1
Irreducible	6	8.7
Obstructed	5	7.2
Recurrence		
Yes	8	11.6
No	61	88.4
Strain Factors*		
Manual work	29	46.8
None	29	46.8
Chronic cough	3	4.8
Urethral Stricture	1	1.6
BPH	1	1.6
Constipation	1	1.6
Co-morbidities		
None	46	74.2
CVS	7	11.2
Respiratory diseases	5	8.2
Metabolic disorders	3	4.8
Seizure disorders	1	1.6

*Not exclusive.
BPH (Benign Prostatic Hyperplasia)
CVS (Cardiovascular diseases – Hypertension = 5, Coronary artery disease = 1, Congestive Cardiac Failure = 1)
Metabolic disorders (Diabetes = 1, Obesity = 1, Thyrotoxicosis = 1)

Six (9.7%) patients had emergency hernioplasty without bowel resection while the rest had elective surgery. Forty-six (74.2%) patients had surgery under local infiltrations using 0.5% lignocaine with adrenaline, 15 had spinal anaesthesia while only one had general anaesthesia. Forty-three (62.3%) hernia sacs were of the indirect type (Table III).

Table III: Surgical management, findings and complications

Parameters	*Frequencies*	*Percentages*
Nature		
Elective	56	90.3
Emergency	6	9.7
Type of Anaesthesia		
Local	46	74.2
Spinal	15	24.2
General	1	1.6
Operative Findings		
Indirect	43	62.3
Direct	20	29.0
Pantaloon	3	4.3
Sliding	3	4.3
Complications		
None	63	91.3
Scrotal oedema	3	4.3
Hydrocoele	1	1.4
Haematoma	1	1.4
Recurrence	1	1.4

The duration of surgery ranged between 50 and 120 minutes with the mean (SD) of 68 (12) minutes. All the patients received prophylactic antibiotics and all had post-operative analgesics consisting of Diclofenac injections. The range of hospital stay was 2-21 days with the mean (SD) of 5 (3) days. One (1.4%) patient had wound haematoma, 3 (4.3%) had scrotal oedema, one each had hernia recurrence and hydrocoele (Table III). Follow-up care was done for 2-10 years with the mean (SD) duration of 5 (2.5) years.

Discussion

The demographic characteristics of the patients studied were not different from the findings from previous studies. [10, 11] Twenty-seven percent of the patients were farmers and 21% were artisans who engaged in heavy manual works. Heavy manual work is one of the predisposing factors in the development of inguinal hernias; this occupation is also known to predispose to the recurrence of hernias. [12]

Inguinal hernias are more common on the right in the males as observed in this study, in which 96.8% of the patients studied were males and 63% of the patients studied had right-sided inguinal hernias. Late descent of the right testis into the scrotum as compared with the left, may be the factor predisposing to abnormalities on the right side. [12] Close to three-quarters of the hernias were inguinoscrotal which is in keeping with the trend of late presentation in hospital which has been observed by other workers; only one of the hernias was a bubonocoele. [13]

Recurrent hernias are more difficult to repair and they are still prone to recurrence. In the present study, 11.6% of the hernias were recurrent and the recurrence was bilateral in one of the patients, who was aged 72years. The patient worked both as mason and a farmer and had had hernia repairs done twice in another facility before this attempt under review was made using mesh hernioplasty. Laparoscopic techniques have been advocated for the repair of recurrent hernias following open surgery and also in bilateral groin hernias. [7] The absence of the equipment and expertise required precluded the use of the latter technique in these patients. Indirect hernia sac was expectedly present in 62% of the hernias in this study. It is important to note that patency of the processus vaginalis is one of the predisposing factors to the development of a hernia. [12]

The choice of anaesthetic technique depends on many clinical factors such as the general clinical status of the patient, size of hernia, bilaterality and primary or recurrent. Local anaesthesia was used for 74.2% of the patients in this study. The routine use of local anaesthesia for the repair of uncomplicated inguinal hernia is advocated. The advantages of this method of anaesthesia include safety, assessment of repair during the procedure and early mobilization. [14] Reduction of the hernia often enhances the local field block required. Spinal anaesthesia was used in patients with bilateral hernias hoping to achieve better patient relaxation and avoidance of drug toxicity.

The range of duration of surgery was comparable to the findings in other studies. [10] The duration was particularly long in patients with bilateral inguinal hernia. The patient whose duration of surgery was 120 minutes had bilateral recurrent hernias.

Antibiotic prophylaxis was employed in all the cases to prevent infection of the inserted mesh. This complication has been a source of concern since the infection of the mesh may necessitate the removal of the mesh for successful control of the infection. There are many reports with negligible rates of infection. [15]

Satisfactory level of analgesia was achieved with the routine use of anti-inflammatory agents such as Diclofenac. Mesh herniorraphy has been found to be less painful and associated with faster return to normal activity than the traditional methods since the closure is tension free. [5,8] Although the current practice is to make hernia repairs day-cases, all the patients in this study were admitted for various reasons including patient's preference and some post-operative complications. The patient who was hospitalized for 21days had repair of bilateral recurrent inguinoscrotal hernia complicated by massive haematoma necessitating exploration.

Scrotal oedema (4.3%), haematoma (1.4%), and hydrocoele (1.4%) were the early complications observed but none was specifically attributable to the use of Mesh. The absence of infective complications may reflect meticulous surgery with rigorous attention to asepsis and the use of antibiotic prophylaxis. So far, only one recurrence was observed in the patient with bilateral recurrent hernia described above and this was recorded five years post-surgery. This is not surprising as that was a third attempt at repair of the hernia with attendant distortion of the anatomy and tissue attenuation

consequent upon fibrosis resulting from previous attempts. Indeed, a laparoscopic technique would have produced a better result in this patient. The other known complications of propylene mesh repair which were not recorded in this study include infection, mesh migration with formation of adhesions, intestinal fistulation and chronic groin pain. [9]

The strength of the present study lied in the relatively long period of follow up which ranged from two to ten years, given the usual difficulties associated with our patients' compliance with the post-surgical instructions, especially, when they are well. The small number of patients in this study is also acknowledged as a limitation.

Conclusion

Lichtenstein repair of inguinal hernia is an effective procedure in our private clinical setting and the outcome is comparable with the results of other workers. It should be the routine method of inguinal hernia repair in resource-poor settings like ours as it obtains in other parts of the world.

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