The Use of Lichtenstein Operation under Local Anesthesia for Inguinal Hernia

A Prospective Study

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ABSTRACT

Background: inguinal hernia is one of the commonest surgical problems among male population and its treatment includes variable methods and their modification. Lichtenstein operation although is very popular allover the world; it is not commonly used in our country.

Objectives: To asses the feasibility and safety of open tension free mesh repair (Lichtenstein operation) of inguinal hernias on ambulatory surgery basis.

Methods: A prospective interventional study of the Lichtenstein operation on 108 patients with inguinal hernias was conducted in the department of general surgery in Al-Kindy Teaching Hospital from April 2006 to April 2008. Data related to age, sex, type of hernia (direct or indirect), feasibility of Lichtenstein operation under unmonitored local anesthesia and its surgical outcome was studied prospectively.

Results: Male : female ratio was 26:1. One hundred and eight patients were operated safely using the (step by step technique) on day surgery basis with minimum morbidity rate (14%). Most of the complications were minor and included: seroma 3.1%, hematoma 1.6%, scrotal swelling 3.1%, superficial infection 1.6%, vasovagal syncope1.6% and wound numbness 3.1%. The majority of patients developed mild postoperative pain (60%). All patients were discharged on the same day of operation.

Conclusion: The Lichtenstein operation can be safely performed under unmonitored local anesthesia in an ambulatory surgery with low morbidity.

Keywords: Inguinal hernia, Lichtenstein operation.

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Inguinal hernia repair is the commonest operation on male patients in general surgery[1]. Hernia repair can successfully performed using general, spinal or local anesthesia. Specialized hernia centers use local infiltration anesthesia in more than 95.0% of cases[2-4].

Day surgery can be considered as the best option for more than 95% of elective hernia repair[4].

The traditional method of stitching muscle to tendon, as in the case of most of the open hernia repair techniques, have been changed following the introduction of polypropylene mesh by Usher et al[5] and prosthetic mesh repair technique by Lichtenstein et al[6,7].

The introduction of the tension free hernia repair (Lichtenstein operation) has had an important impact on patient and surgeon attitude toward hernia surgery.

General surgeons can easily learn how to do Lichtenstein operation under local anesthesia confidently with low complications and recurrence rate, so this operation has become the gold standard for inguinal hernia in an ambulatory surgery[8].

In this study we present a series of a hundred and eight patients who had inguinal hernia repair using (step by step technique) of local anesthesia with Lichtenstein operation in the department of general surgery in Al-Kindy Teaching Hospital.

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Methods

A prospective study was conducted from April 2006 to April 2008, over these two years 108 consecutive patients with inguinal hernia were operated and followed up in Al-Kindy Teaching Hospital, all of them were treated by Lichtenstein tension free herniorrhaphy under unmonitored local anesthesia.

After overnight fasting, all patients were placed in the supine position on the operating table tilted head down by about 15 degrees. All patients had iv cannula gauge16 inserted, one gram ampicillin and cloxacillin iv and iv infusion were started immediately before the operation. Anesthetist was ready and available if needed. After the use of povidone iodine as a local antiseptic, aseptic draping of surgical site was done.

A solution of 1% lignocaine with adrenaline (1:200000) was used by diluting the 2% lignocaine with an equal amount of normal saline, 5-10 ml of this solution is injected immediately under the intended skin incision and a further 5 ml into the deep subcutaneous fat in the lateral side of the wound.

A skin incision is placed 1 cm above and parallel to the inguinal ligament, extending from the pubic tubercle to about 1 cm lateral to the deep ring, dissection is deepened into the subcutaneous fat, where two veins, the superficial epigastric and the superficial external pudendal were divided between ligatures. A further 5 ml of local anesthesia is injected just deep to the external oblique aponeurosis at the lateral end of the incision, few ml of local anesthetic is injected at the neck of indirect hernia sac before transfixation by vicryl 1\0 and excision. Further few ml of local anesthesia is injected around the cremasteric vessels. The total amount of local anesthetic was between 20 ml to 35 ml.

The direct sac is invaginated by a purse string suture in transversalis fascia using vicryl no. 1\0.

Care is taken with the use of electrocautary and blunt dissection, also traction on the cord or peritoneum is avoided to prevent provocation of bradycardia and arrhythmias.

A prolene mesh is trimmed to fit the space of inguinal canal floor with a slit cut laterally to accommodate the spermatic cord. The medial edge of the mesh is sutured to the tissue over the pubic tubercle using 2\0 prolene or nylon suture. Continuous suture is used to fix the inferior edge of the mesh to the inguinal ligament, and three to four sutures are used to fix the superior edge of the mesh, the two tails are overlapped lateral to the deep ring and stitched by two interrupted sutures making sure that the cord is not constricted in the new deep ring of mesh.

Having checked for haemostasis and safe guards the ilioinguinal nerve, the cord is replaced, the external oblique aponeurosis is closed by 1\0 vicryl, the skin sutured by 2\0 nylon, which is removed on the 7^{th} or 8^{th} postoperative day.

Postoperatively, all patients were observed for one to two hours in the recovery room, all patients were discharged with oral paracetamol qid, oral antibiotics (amoxillin and clavulenic acid) for 5 days, postoperative instructions and a telephone number of the operating surgeon for any emergency need and for follow up.

All patients were reviewed clinically on the 7^{th} and 30^{th} days postoperatively and every two months for a time ranging from one to two years.

The patients were asked to give an estimate of pain relief on a four point verbal rating scale (no pain, mild pain, moderate pain, severe pain).

Results

A total of 108 patients were treated by Lichtenstein operation during one year period and followed up for a time ranging from one to two years.

The mean age of patients was 45 years, and the range was (20-79) years, (Table 1).

One hundred four of these patients were males and 4 were females, male/female ratio = 26/1, (Table 1).

Overall morbidity rate was 14% (no.= 18), seroma 3.1% (no.=4), hematoma 1.6% (no.=2), scrotal swelling 3.1% (no.=4), superficial surgical site infection 1.6% (no.=2), vasovagal syncope 1.6% (no.=2) and wound numbness 3.1(no.=4), (Table 2).

Postoperative pain evaluation: The majority of patients experienced just mild pain (no.=60). Thirty six patients had moderate pain and twelve patients had severe pain, (Table 3).

The majority of postoperative pain was managed by oral paracetamol 1 gm qid, only 12 patients needed extra analgesics i.e. diclofenac suppositories or injection.

Follow up was completed by clinical examination and telephone contact.

None of our patients developed recurrence of hernia during the median follow up period this was 15 months.

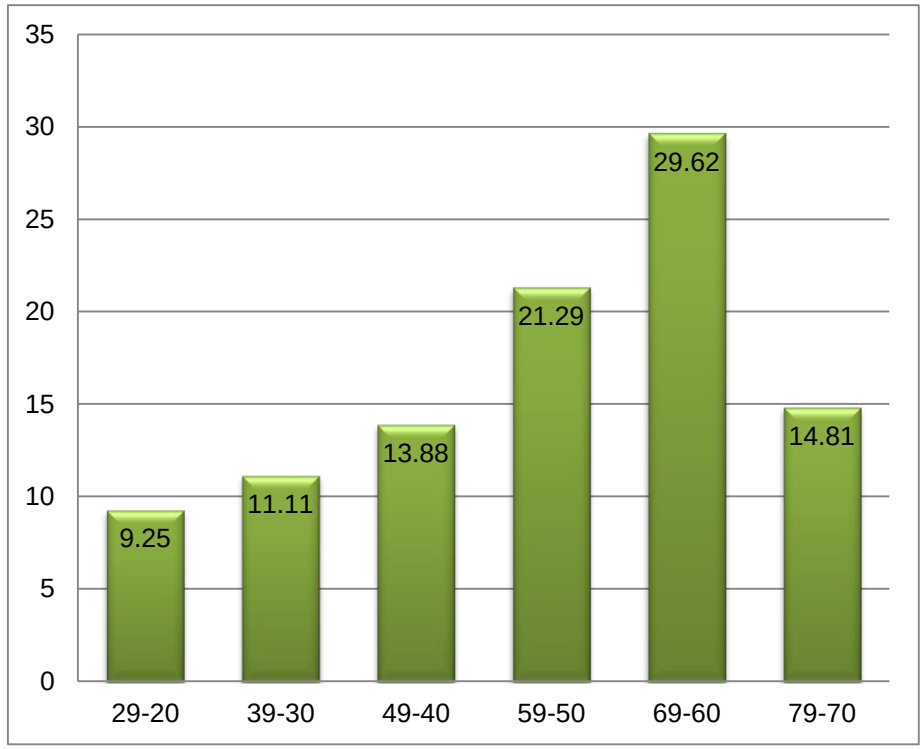

Figure 1: Age distribution among patients.

Table 1: Gender distribution among patients.

Gender	No.	%
Male	104	96.2
Female	4	3.7
Total	108	99.9

Table 2: Postoperative complications (n=108).

Complication	Number	Percentage
Seroma	4	3.1 %
Haematoma	2	1.6 %
Scrotal swelling	4	3.1 %
Superficial infection	2	1.6 %
Vasovagal syncope	2	1.6 %
Wound numbness	4	3.1 %
Total	18	14 %

Table 3: Postoperative pain (n=108).

Mild pain	60	55.5 %
Moderate pain	36	33.3 %
Severe pain	12	11.1 %

Table 4: Postoperative morbidity in different studies.

Author	Type of hospital	Morbidity %
Asadallah	General hospital	49%
Lau H	Day surgery center	5%
Sakorafas	General hospital	2.5%
Danielsson	General hospital	42%
Harjai	General hospital	57%

Discussion

In the infiltration technique of local anesthesia 40-60 ml of 1% lignocaine is injected blindly in a fan wise manner under the external oblique aponeurosis[9] this requires a high level of skill which is not always available, while in our (step by step technique) of local anesthesia the total amount of 1% lignocaine never exceeded 35 ml and the whole procedure is under vision; i.e. nothing is injected blindly and requires only simple training.

Postoperative recovery is definitely faster with local anesthesia compared with regional and general anesthesia techniques[9].

The overall morbidity rate in current study was 14% (no.=18), the recorded morbidity rate in different literatures varies from 2.5% as recorded by Sakorafas[10] to 57% which was given by Harjai[11], (Table 5), this wide difference in the rate of morbidity can be explained on the basis of whether the study was performed in a specialized centre or a general hospital i.e. it was minimum in the specialized centre, also some of the studies did not put in consideration some of the mild complications such as wound erythema, mild scrotal swelling and scar tenderness. We did not come across any non surgical complications, such as cardiovascular, pulmonary, gastrointestinal or urinary complications as it is described for inguinal hernia repair under general or spinal anesthesia, this is comparable to a study done by Kark et al in which Lichtenstein technique under local anesthesia was used for 3175 patients with inguinal hernia and showed that no patient had urinary retention or respiratory complications postoperatively[4].

While in a study done by Asadulla et al 7.1% of patients developed urinary retention when had the operation under spinal anesthesia and in 10% in patients who had it under general anesthesia, also

10% of these patients developed respiratory complications[12].

Urinary retention happened in 6% and 14.29% of patients who had the operation under general anesthesia in studies done by Danielsson et al[13] and Harajai et al[11], respectively.

The incidence of infection after hernia repair has been variously reported from 0.5-8%([1,14,15], in our study it was 3.2% (no.=4), and were superficial and treated successfully with antibiotics and regular dressing and non of them needed removal of mesh.

In a study done by Schulman et al, viewing the work of 72 surgeons who performed over 16000 tension free mesh repair, the incidence of infection was 0.6%[7] and Kark et al reported an incidence of wound infection of 1.3% in a series of Lichtenstein operation under local anesthesia including 3175 patients[4], while Danielsson reported an incidence of 6%[11].

In a study done by Kark 1% of patients who had Lichtenstein operation had postoperative pain for up to two months, and in 0.4% for up to one year[4]. Sakorafas found postoperative neuralgia for over six months in 1% of 540 patients who had Lichtenstein operation[10], and in 10.20% in a study done by Harjai et al[11].

Wound numbness and neuralgia indicates some degree of damage to one or other of the ilioinguinal, iliohypogastric or genitofemoral nerves. In the current study wound numbness occurred in 3.1% (no.=4) which is not more frequent than in other series. It is a transitionary, minor problem in the early post operative period following open groin hernia repair and usually disappears in 2-3 years[11,13].

Asadulla reported an incidence of neurogenic symptoms (burning pain, hypo and hyperesthesia) in 1.9% of his patients[12].

Scrotal swelling happened in 3.1% of cases, in other studies it ranges from 1% to 14%; Kark et al showed incidence of 1% and 14.29% in a study done by Harjai et al[4,11].

Wound hematoma happened in 1.6% of our patients, the same result was noticed in Kark study[4], and in a study done by Danielsson postoperative hematoma was noticed in 12% of patients who had Lichtenstein operation under general anesthesia[13], while Harjai recorded 1.02% incidence of postoperative wound hematoma[11].

Wound seroma happened to 3.1% of our patients, seromas have been universally reported after groin hernia surgery, Aziz et al reported an incidence of seroma in 9% of his patients[16], while in a study done by Harjai et al , seroma happened in 4.08% of his patients[11].

There was no recurrence in our series during the short mean follow up period of 15 months.

Recurrence is the ultimate test of long term success of hernia repair; the recurrence rate of most specialized hernia centers is less than 1-2% and in some series it is zero[16,17].

In conclusion; day case elective inguinal hernia surgery (Lichtenstein operation) is a simple and safe procedure which can be performed in a teaching hospital setup under unmonitored anesthesia, with a low morbidity and recurrence rate.

Recommendation: We recommend the use of Lichtenstein operation under local anesthesia by the step by step technique in a day case setting.

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