Paraumbilical hernial repair by mesh plug under local anesthesia

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Abstract

Back ground and objectives : The standard method of repair of paraumbilical hernia is by the mayo's technique,using a double-breasted flap of the rectus sheath.

The present study describes and evaluates the application of a prolen mesh plug in the paraumbilical repair.The use of a mesh plug in hernial repair is not a new concept with previous investigators yielding consistently excellent results in the repair of femoral and inguinal hernia.

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Patients and Methods: The study is prospective analysis of 36 patients having undergone PUH repair using the mesh plug technique in the period April 2004-April 2007. The study was conducted in Al-yarmouk teaching hospital .There were 16 males and 20 females with a median age of 50 years.
(range 30-80 years). Seventy percentage of the patient sample was obese (median BMI 30). whenever possible local anesthesia was used. Principal outcome measures were post –operative complications, recurrences,length of stay in hospital, analgesia, drain, return to normal activities and patient satisfaction.
Results: post operative complications encountered included one case of seroma and a single case of wound infection.
Ninety eight persent [35] of patients were satisfied with procedure.
Conclusion : Mesh plug repair can be performed with minimal post operative pain , minimal postoperative complications ,low recurrence rate and achieving excellent patient satisfaction.
Prosthetic mesh plug repair under local anesthesia could become the standard treatment for PUH in adults.

Introduction

Umbilical hernia in adult is more accurately described as a paraumbilical hernia because the defect is not through the original umbilical scar but either immediately above or below it with no possibility of spontaneous closure [1] .
The reported incidence of umbilical hernia varies between 10 and 14% of all hernia[2,3] .
Elective operation in adults is advisable due to the recognized risk of strangulation [4,5] .
The modern operation for umbilical hernia dates from 1881 with the longitudinal overlapping of layers of fascia by lucas-Championniere.Mayo in 1894 proposed a transverse rather than longitudinal overlapping of fascia.[2] . Alternatively, repair with simple direct apposition of the fascial defect in a transverse position has also been described [4].

Herniorrhaphy using simple suture or mayos technique have remained the most frequently used methods of repair in specialized hernia centres in recent times.

However, retrospective studies have shown high recurrence rates(10-30%) [5,6] . In Mayo's original series recurrence was reported in only 2 out of 75 cases.This result, however,has not been equalled since.

In the experience of Kelly,Pringle,Dubose and Turner,the results of this operation were not satisfactory.

The recurrence rates in their series ranged from 22 and 40%. The lowest figure 7.5% according to Askar (1978) seems to be the one reported by Gibson and Gasper [7].

The use of a cylindrical rolled plug of synthetic mesh has been described earlier in the repair of femoral and recurrent inguinal hernia [6,8,9].

A prospective study of the mesh plug(prolene) technique was undertaken to evaluate the efficacy and benefit of this simple technique in improving patient comfort and early return to normal activities with a low recurrence rate.

Patients and Methods

This study was conducted in Al- Yarmouk teaching hospital from April 2004- April 2007.A total of 36 patients were studied (20 females& 16 males) .Twenty patients had surgery under local anesthesia while general anesthesia was administered in 16 patients because of 6 patients were diagnosed as strangulated, the other 10 patients refused local anesthesia.

Principal outcome measures included operating time,length of stay,anesthetic used,analgesia required, number of drains and duration and recurrences .

Patients were categorized as satisfied according to the definition used by Reittor et al (2000) [10] . Patients were deemed satisfied if they had no complaints regarding their operations or operative results and if they would be willing to undergo the same procedure again if hernia repair was necessary.Patients were categorized as unsatisfied if they were dissatisfied with their

operation or operative results or would not undergo the same procedure again.

Surgical technique

Patients were advised to cleanse their umbilicus daily with chlorhexidine solution for few days prior to operation.

Pre –operatively flucloxacilline (1gm) was given intravenously in every cases, unless Contraindication. Local anesthesia was used with 1% xylocaine, if there was no contraindication 1% xylocaine in adrenaline was preferred.

The solution was injected subcutaneously after raising an intradermal weal and then around the hernia.

The incision (3-4cm) was made either supra-umbilically or infra-umbilicaly, depending on the location of PUH.The hernial sac was dissected from surrounding tissue until the the hernial ring was identified circumferentially. The contents of the sac could be reduced, followed by the sac itself. In case of an incarserated hernia,a gentle pressure on the sac with moist gauze was adequate to reduce content. In rare cases it may be necessary to open the sac and excise the contents .

A prolen mesh plug was prepared like a cigarette stub from a 2.5cm x 10cm mesh sheet. If the hernial defect was more than 2cm in diameter a double layer was used. The stub was then inserted into the defect with its external margin flush with the hernial ring and fixed with 3/0 prolene sutures in four quadrants (fig1) Redi-vac drain was used in all cases.

The incision was closed with a subcuticular suture.

The patient was then discharged with advice to return after 48 hours for removal of the drain.

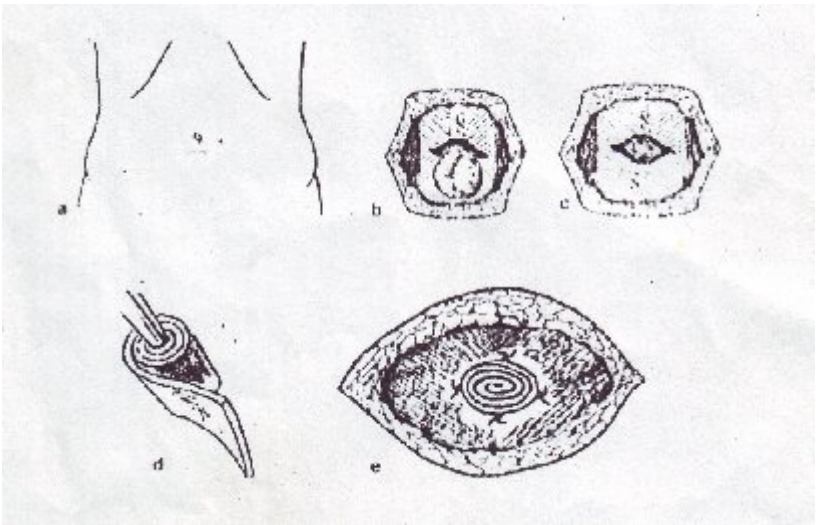

Figure 1:(a) incision; (b) dissection of the sac and outline of the defect; (c) contents reduced along with the empty sac; (d) mesh plug created; (e) mesh plug in-situ

Results

General

Thirty-six cases of PUH (20 female,16 male) were operated on in the period between April-2004 and April -2007 median operating time was 50 minutes (range 40-100 minutes).Seventy percent of patients in the current series were obese (BMI 30).

Hernia

In the current series there were ten cases (27%) of incarceration and six cases (16%) of strangulated hernia.

Duration of the hernia ranged from 1 month to 25 years. Fifty percent (18) of the patients had hernia for 4 years or more with 15 % (4) having hernia for over 10 years.

The size of the hernial defects ranged between 1 to 4cm diameter,with ten of the cases(27%) being = 2cm in diameter.

Significant concomitant medical problems were observed in the study participants. Twenty five (70%) were obese (BMI 30),15 (41%) had cardiovascular problems and 9(25%) had pulmonary problems.

Post operative recovery

Forty four percent(16) of the patients were discharged within 48 hours of the procedure.The 20 patients repaired under local anesthesia were discharged within 24 hours.

Of the patients repaired under a general anesthetic an 80-year old lady experienced post- operative episodes of complications requiring prolonged hospital stay of 10 days.

There were no perioperative or post operative deaths and there were no adverse reactions to the local anesthetic.Ninety percent (32) of patients were able to cope with duties around the home within 1-7 days of the repair.In addition, 65 % (23) of the patients were able to return to doing usual activities of social life within 8-14 days and a further 14% (5) of patients by 15-21 days post operatively.Ninety percent (32) of patients required non narcotic analgesia post-operatively. The drains were left insitu for a median of two days, (range 1-7 days)

Complications

There was one case of seroma, and one case of superficial surgical infection .

Follow –up

The median post operative follow up period was 12 month. Ninty-eight percent (34) of patients were satisfied with the procedure and operative results.

Discussion

Paraumbilical hernia is more common in females, caucasians and the obese [2] . It is relatively common, especially in the fifth and sixth decades of life, with an acquired defect in over 90% of cases [3] . In the current series it is comparable with other studies. Several accounts in the literature have documented the tendency of PUH to strangulate [2]. Furthermore ,incarcerated PUH are associated with an increased mortality [12].The mediam age of the study (50) years.The operating time was 44 minutes, comparable with the operating time reported by Arroyo et al.(2001) [6]. The repair of the two cases of incisional PUH took an average 65 minutes. This type

of repair is technically more difficult than the repair of primary PUH due to surrounding adhesions.

Local anesthesia was used as the technique of choice for PUH repair in the current series, unless contraindicated by patient co-morbidities or patient refusal.

Local anesthesia was selected as it has the lowest rate of systemic complications without any increase in recurrence or local complication rates [13].

In the present series 55% (20) of patients underwent repair under local anesthetic, including six cases with incarceration.

The median duration of stay recorded for the current series was one day.

This appeared to be an improvement on Runyon and Juler (1985) who observed a mean hospital stay of 6.6+/-5.0 days [14]. Celdran et al.(1995), using a H--configuration mesh repair for umbilical hernias,repoted that patients were discharged form hospital between 24-48 hours [15]. interestingly,Arroyo et al.(2001) recorded a mean post –operative stay following umbilical hernia repair in the day surgery unit of 172 minutes [6]. Thereafter ,patients were discharged home. At home the home care unit followed the patients recovery.Medina et al (1997) found patients undergoing herniorrhaphy with a BMI above 37[97.5%] were at a six-fold increased risk of surgical wound infection [16].

Eleven obese patients(six male,five female,median age 60 years, median BMI 34) in the current series were admitted with large hernias and six of these were incarcerated.Five of these eleven cases were repaired under local anesthesia. The median length of stay was two days and mean operating time was 63 minutes. Post operative complications in this group were seen in only two patients.From the follow up 90% (32) were able to return to usual activities with 1-7 days.According to Askar (1984) closure of the hernial defect should not take place at the expense of increasing the strenghth on the already exhausted stretched aponeurosis [17]. The hernial orifice should be filled or closed without any additional tension these fundamental principles appear to be satisfied by the mesh plug technique outlined in the current series.

In conclusion

Mesh plug repair can be performed with minimal post-operative complications, minimal post-operative pain and achieving excellent patient satisfaction

Prosthetic mesh plug repair under local anesthetic could become the standard treatment for PUH in adults.

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