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Postoperative complications of prolene mesh repair in incisional hernia at Al-Jumhoori teaching hospital in Mosul, a case series of fifty patients

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incisional hernia, prolene mesh, onlay technique..

ABSTRACT
Background: Incisional hernia remains one of the most prevalent post operative surgical complication with long term incidence of 10-20%, which represent the evidence of poor wound healing in these patients.
Objective: To study the risks associated with prolene mesh repair for incisional hernias, how they are managed, and how these risks compare to those in previous research.
Setting: Al- Jumhoori Teaching Hospital , Mosul. From Jan. 2006 to Dec. 2007.
Materials&Methods: A prospective study of fifty cases with incisional hernia that were treated by prolene mesh repair after elective or emergency surgical operations with follow up between (12-36) months to account for the complications of prolene mesh repair and the management and outcome of these complications was conducted.
Results: In 22% of the patients, complications were noted. These complications were categorized as seroma in 8%, deep SSI in 8%, superficial SSI in 4%, and hematoma in 2%. During the observation period of twelve to thirty-six months, there was no sign of a recurrence.
Conclusions: The number of complications that arose from our research was manageable and comparable to those of previous investigations. The production of seromas and subsequent infections at the surgical site are the most often reported consequences. The vast majority of these problems are amenable to non-invasive treatments such as wound care in the affected area and antibiotic medication.

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INTRODUCTION

Hernias are defined as the abnormal protrusion of a viscus or portion of a viscus through an abnormal hole in the walls of the cavity that they are contained in. Hernias always consist of a sac, the contents, and a neck. Hernias may include the ovary, appendix, bladder, small intestine, or large bowel in addition to the omentum. (1). An incisional hernia is

an aberrant protrusion of a viscus through the musculoaponeurotic layers of a surgical scar. This condition is medically known as an incisional hernia. (2) . Wound dehiscence and incisional hernia may be distinguished from one another by looking at whether or not the incision on the skin has completely healed. This is done since the period at which it is possible to say that a scar has developed is subject to discussion. Dehiscence of the wound occurs prior to the epidermal healing process, while incisional hernias are seen below a wound that has already healed. (2). It is possible that wound dehiscence is linked to the eventual development of an incisional hernia. The variables that contribute to wound dehiscence and incisional hernia are comparable and share many of the same contributing elements. The preoperative state of the patient, the method used to close the wound, and postoperative complications are all factors that might contribute to the failure of a wound to heal properly. (2)

Categories of hernia repair:

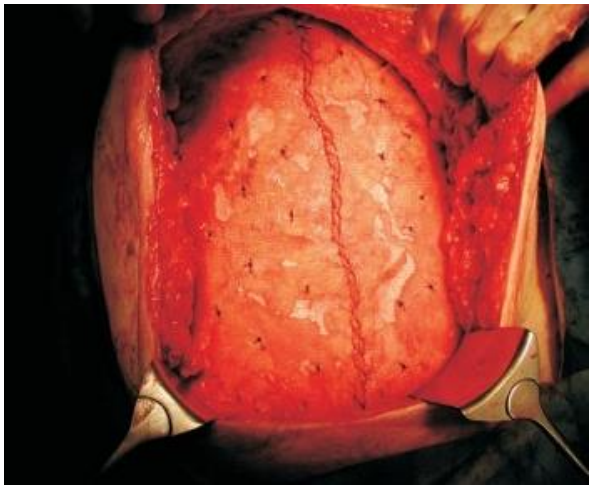
Tension-free repairs by use of prosthetic mesh have a significantly lower failure rate, approximately 10%, than sutured repairs where the defect is brought together under tension, which have a failure rate of 40%. Generally, tension-free repairs using prosthetic mesh have a significantly lower failure rate than sutured repairs (1). Polypropylene and expanded polytetrafluoroethylene (EPTFE) are the two types of material that are used for permanent prosthetics the majority of the time. (3) In 1963, Usher was the first person to commercially develop polypropylene (4). Because of the wide hole size of the polypropylene mesh, it is possible for macrophages and neutrophils to infiltrate the material, which results in increased resistance to infection. Additionally, because of its porosity, it facilitates improved fibrovascular ingrowth and has a lower incidence of seroma development. (3,4). In this study, we tried to evaluate our experience in such surgery in comparison with others.

MATERIALS AND METHODS

This is a prospective observational case series analysis of fifty patients who underwent elective incisional hernia repair by prolene mesh at Al-Jumhoory Teaching Hospital in Mosul between the 1st of June 2006 and the 31st of December 2007. The patients were treated for hernias at Al-Jumhoory Teaching Hospital between the dates of 1st June 2006 and 31st December 2007. Everyone who participated gave their permission to participate. After collecting individual histories, medical examinations, and operation notes, the data were recorded on a performa and afterwards evaluated. Patients were monitored for a length of time ranging from 12 to 36 months to check for post-operative and late problems.

Surgical technique

Herniotomy was performed after exposure during each and every procedure using the same incision that had been made before. By releasing the adhesions that were holding the bowel and omentum together with the sac, the surgeon was able to locate the defect's borders. The flaw was repaired via continuous single-layer Nylon (1) suturing, which was used to seal the defect. Prolene mesh (Ethicon®) was placed on the site of the repair using the onlay method Figure(1) with a margin that was at least 5 centimeters away from the defect. Several interrupted stitches using 3/0 prolene were used to secure the edges of the mesh, and a few central stitches were also employed.



Figure(1): Onlay mesh fixed with multiple continuous sutures

After making two distinct incisions in the skin, two large Redivac drains were inserted on each side of the wound at the most dependant region. The skin was then closed with non-absorbable suture, and the surgical incision site and drain sites were each dressed separately. The procedure took, on average, ninety minutes to complete. Every patient was given a single dose of the prophylactic antibiotic cefotaxime (1 gram intravenously) at the time of induction of anesthesia, as well as for (5-7) days postoperatively. In addition to this, the surgical gloves worn by the operating team were changed intraoperatively just prior to the application of the mesh. These precautions were taken so that there would not be an infection at the surgery site. The drains were left in their original positions for a total of two weeks.

RESULTS

Eleven patients were males, and 39 patients were females; all of them were multipara, with a number of pregnancies ranging from 4 to 11**.** (Figure 2). The mean age of the patients was 48 years ranging from 20-62 years old, with a mean BMI of 27(overweight). 34 individuals were diagnosed as having a transverse incisional hernia (31 had a past incision of paraumbilical hernia, and the remaining 3 had a past caesarian section). 8 participants had the midline type (all of whom had a prior laparotomy), 4 patients had the paramedian type, and eight patients had the oblique (grid iron) type (all had appendicectomy that occurred in the past). (Figure 3).

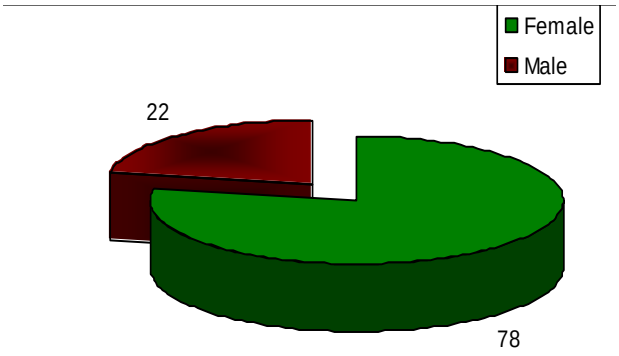
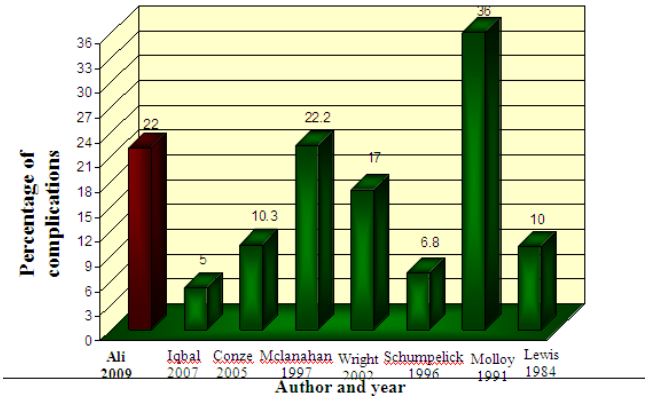


Figure 2: Sex distribution



In the course of the follow-up period that lasted from twelve to thirty-six months, eleven patients, or twenty-two percent of the total number of patients, reported experiencing problems. (Table1). All four of our seroma development patients were females with a transverse type of hernia. This accounted for 8% of our entire patient population. They did not suffer from diabetes. They were given prophylactic antibiotics and regular aspiration of clear fluid while being treated for their obesity. Three of them had BMIs of 31, 32, and 34, respectively, while one of them had a BMI of 26. Everything was fixed within a month, and there was no reoccurrence. Four of our patients, which accounts for 8% of the total, had a deep SSI that presented as a chronically draining sinus. They were first treated conservatively with antibiotics based on the findings of culture and sensitivity testing; nevertheless, the pus discharge continued, and we were forced to remove the mesh in two patients after two months and in the other two patients after three months. Two of our patients acquired superficial skin SSI, which accounts for 4% of the total; one of these patients is a female diabetic. A stitch abscess was seen, along with redness and erythema, as well as minor pain. Both patients were treated by removing their stitches, administering systemic antibiotics, and applying diluted povidone iodine solution to their wounds often. The subsequent five days saw the onset of healing, and there were no more difficulties.Only one patient out of the total had a subcutaneous hematoma form (which is 2% of the total). She was a woman who had a hernia of the transverse type and did not have any complicating problems; thus, she was treated by having the hematoma evacuated via the incision margins. During the twelve to thirty-six month follow-up period for our patients, there was not a single instance of recurrence (0%).

DISCUSSION

Hernias that develop at the incision site are the most prevalent kind of post-operative complication that may occur following laparotomy(5). Even though there have been advancements in suture material and procedures of fascial closure, the incidence of incisional hernias has remained stable between 10% and 20% over the years. Implantation of a synthetic prosthesis is now the most effective treatment option for incisional hernia repair; but as long as we are unable to control the endogenous collagen metabolism, this will remain the case. (6) The fact that the intra-abdominal pressure is not counteracted by using the onlay technique for the placement of synthetic mesh is the most significant disadvantage of doing so. Additionally, the significantly larger forces will put continuous stress on the fixating sutures, which increases the risk of the prosthesis tearing away from the fascia. In our study, the percentage of complications was 22 %, which was comparable with other studies **(Figure4)**

The management of complications of synthetic mesh repair of incisional hernia has been studied thoroughly. Regarding seroma and SSI, the nature of

the aspirate will direct subsequent management. In our research, the decision to use expectant management was made when the fluid that was aspirated was found to be sterile. A local daily dressing with diluted (1%), Povidone Iodine solution, prophylactic antibiotics, and regular aspiration of clear fluid, along with non-steroidal anti-inflammatory medicines (such as ibuprofen 200mg three times a day) to ease discomfort are all recommended treatments. The clinical look of the wound should begin to improve within twenty-four hours, and the symptoms should stop occurring within seven days.

When the fluid that is aspirated from the subcutaneous layer reveals that it is contaminated with bacteria, it is appropriate to make an effort at antibiotic therapy based on the results of the culture and sensitivity tests. If there is a possibility of mesh contamination or if the subcutaneous infection is becoming worse, the incision has to be opened for at least 10 centimeters and then irrigated with a 0.9% normal saline solution. Under general anesthesia, a local wound exploration should be conducted if there is further evidence of general infection or generalized sepsis or chronic sinus discharge. At this point, the removal of sutures or loose mesh may be required (7). Film-like meshes, like PTFE, often exhibit very little or no tissue development and are simple to remove. On the other hand, every porous mesh is completely enmeshed inside the robust and thick scar tissue. (8)
According to our findings, removal of the mesh was not required in individuals with early infection. It was possible to leave the wound and even the fascia exposed while covering it with an acceptable wound dressing (gauze soaked in 0.9% normal saline solution), and this allowed for the formation of granulation tissue to be monitored. Secondary closure of the wound may be performed if the infection has been brought under control and the wound has granulated into the mesh. In the event that this conservative therapy is unsuccessful, as it was in each of our four patients, the mesh will need to be removed. This was the situation in four of our patients who developed profound SSI, and for whom conservative therapy did not assist; thus, the mesh had to be removed from their bodies.

CONCLUSION

The incidence of problems that occurred in our patients who were treated with polypropylene mesh as an onlay mesh repair was comparable to the range of difficulties that occurred in previous investigations. The occurrence of seroma was the most prevalent complication, followed by SSI. The majority of these issues are amenable to conservative treatment, which includes providing local wound care, often aspirating seroma, and administering antibiotics to the patient. After a waiting period of three months, the patient had a hematoma that was treated by incision and evacuation. The patient had a deep SSI that was accompanied by a persistent flow of pus.

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