



## A Retrospective Study of the Complex Incisional Hernia

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ABSTRACT

**Abstract:** Introduction: The main aim of incisional hernia repair is tension free repair, thus the use of mesh decrease reoccurrence chances. There are various modalities available for treatment of incisional hernias which vary depending on presentation, time of onset, patient's age; each has his own merits and demerits. The aim of this study was to report our experience in the treatment of incisional hernia.

**Material & Methods:** Clinical study was performed by revising clinical notes, through which we evaluated the different treatments of patients with complicated incisional hernias. All the 150 patients, whose hernia were only an attendant pathology and did not represent itself the cause for an emergency surgical treatment, were excluded from the trial.

**Results:** Out of total 150 patients taken up for hernia repair 45 presented with hernia associated with pfannenstiell incision, 29 patients were of colostomy closure incision, and rests were of midline laparotomy incisions. 15 presented with Ulcerated skin with associated necrosis, 45 patients came with obstructed and strangulated incisional hernia.

**Conclusions:** The repair of complex hernias is challenging. It requires a broad range of methods and often interdisciplinary cooperation. The rate of recurrence and wound complications is high. The treatment of complicated incisional hernias by intraperitoneal method is preferred as it has less-complications and less-chances of recurrences. In cases with enterocutaneous fistula where infection is already settled and anatomical repair is preferred to mesh repair.

### KEYWORDS

Incisional Hernia, Complications, Treatment, Emergency

### Introduction

A hernia occurs when an organ pushes through an opening in the muscle or tissue that holds it in place. It is a protrusion of a body part through a defect in the anatomic structure that normally contains it. They are most common in the abdomen. The hernial orifice is the defect in the innermost layer of the abdomen, and the hernia sac is an outpouch of the peritoneum. Abdominal wall hernias only occur in certain areas – namely, where aponeurosis and fascia are devoid of the protecting support of striated muscle. Many such areas are present in the 'normal' individual but others may be acquired through muscular atrophy, surgery or trauma. Because of these anatomical relationships, common sites of hernia include the groin, umbilicus and the linea alba. However, they can also appear in the upper thigh, belly button, and groin regions.<sup>1</sup> Though the majority of hernias are not immediately life threatening, they will not go away on their own and will require surgical correction to prevent potentially dangerous complications. Groin hernia and hydrocele are two of the most common surgical conditions globally. Hernia is derived from a latin word meaning "a rupture". Abdominal wall hernias are frequently encountered in surgical practice accounting for 15% - 18% of all surgical procedures. Worldwide, more than 20 million hernias are operated per year.<sup>2</sup>

Hernias are caused by a combination of muscle weakness and strain. A hernia can develop quickly or over a long period of time, depending on its cause. More than 750,000 hernias in USA and approximately 125,000 hernias in United Kingdom are operated per year. The incidence of abdominal wall hernia in different countries varies from 100 - 300/100000 per year.<sup>3</sup>

Although males are affected more commonly (7:1), the incidence of femoral hernia is four times higher in females. The incidence of hernia increases with advancing age. Indirect hernia is twice as common as direct hernia. Inguinal hernias are more common on right side.<sup>4</sup>

Repair of abdominal wall hernia represents the most common group of operations performed by general surgeons all around the world. Incisional hernia is a serious complication after abdominal surgery which occurs in 11-23% of laparotomies.<sup>5</sup>

In 2003 it was estimated that over 100,000 ventral incisional hernia repairs were performed in the US. Risk factors for incisional hernia formation and preventive strategies are not clearly defined, but according to data from literature, significant demographic factors influencing incisional hernia incidence are age (> 45 years) and male gender. Preoperative anaemia (Hb< 100 g/l) and BMI > 25, associated with previous laparotomies and postoperative catecholamin-therapy also seem to play an important role. The tension-free repair is one of the key concepts in hernia surgery. The use of mesh prosthesis decreases the recurrence rates, particularly for inguinal and incisional hernias. Recently, the laparoscopic approach extended the options and approaches for repairing the fascial defect.<sup>6</sup>

The emergency treatment of incisional hernias is not frequent, and its technical approach can be different from the elective one, both for the septic conditions in which the emergency treatment is usually performed and for the patients' age which can lead to several technical difficulties. As an emergency, it often occurs in elderly patients with voluminous hernias complicated with strangulation or obstruction. In some of these cases the surgical approach may also include an intestinal resection, with the possibility of peritoneal contamination.<sup>7</sup> This study aims at reporting our experience in the emergency treatment of complicated incisional hernias, analysing the results obtained with the employment of synthetic prosthesis versus the open surgical repair.

Surgery performed for various hernias are the most common surgeries performed by any surgeon worldwide. Incisional hernia is a complication occurring after various abdominal surgeries at the operation site. Risk factors for incisional hernia are age >45 years, male preponderance, BMI >25, associated with previous laparotomies. The main aim of incisional hernia repair is tension free repair, thus the use of mesh decrease re-occurrence chances. There are various modalities available for treatment of incisional hernias which vary depending on presentation, time of onset, patient's age; each has his own merits and demerits. The aim of this study was to report our experience in the treatment of incisional hernia.

### Material & Methods:

We performed a clinical study by revising clinical notes, through which we evaluated the different treatments of patients with complicated incisional hernias. All the 150 patients, whose hernia were only an attendant pathology and did not represent itself the cause for an emergency surgical treatment, were excluded from the trial.

A retrospective study was performed by studying the clinical history record and patient were evaluated for type of incision, skin necrosis, enterocutaneous fistula, obstruction and strangulation, post-operative complications, hospital stay and recurrence. 150 patients were studied (65 males, 85 females); the patients were treated with intraperitoneal prolene mesh repair except in cases with enterocutaneous fistula were treated with anatomical repair. Observations were made with regards to presentation at the time of admission and all cases were followed upto six months after discharging from hospital.

**Results:**

Out of total 150 patients taken up for hernia repair 45 presented with hernia associated with pfannenstiell incision, 29 patients were of colostomy closure incision, rest were of mid-line laparotomy incisions. 15 presented with Ulcerated skin with associated necrosis, 45 patient came with obstructed and strangulated incisional hernia. The surgical technique carried out was prolene mesh which was placed intraperitoneally. The mesh was fixed with non- absorbable sutures. The anatomical repair method was used for 20 cases presented with enterocutaneous fistula. (Table 1) The complication noted was 9 wound suppurations, 7 wound hematomas, and 4 cutaneous necrosis and in six month follow up 5 recurrences were noticed.

**Table 1: Comparison of presentation in males and females: Presentation Female and Male**

Presentation	Female	Male	Total
Pfannestiel incision	30	15	45
Colostomy closure incision	12	17	29
Skin Necrosis	7	8	15
Obstruction and strangulation	10	15	41
Enterocutaeneous fistula	10	6	20

**Table 2: The complications noted were as follows.**

Complications	Number
Wound suppuration	9
Wound hematoma	7
Cutaneous necrosis	4

**Discussion:**

Incisional hernias are the most frequent "late complications" after laparotomy. They develop in more than 10% of patients and their incidence is related to numerous risk factors. The most important risk factors are obesity, impaired wound healing of the laparotomy wound, malnutrition and tobacco smoking.<sup>8</sup> Regarding the multifactorial pathogenesis of the disease local tissue ischemia is one of the most important risk factors. This causes weakness of the fascia and finally incisional hernia. In addition, there are more rare causes, such as immunosuppression, diseases of the collagen metabolism and connective tissue diseases (e.g. patients with aneurysms, Ehlers-Danlos-syndrome). Any factors which are characterized by a persistent or frequent high intra-abdominal pressure (e.g. chronic cough) contribute to the development of an incisional hernia. An important risk factor is the surgeon her/himself, i.e. the quality of the abdominal closure and this is not sufficiently considered in the scientific literature. The pathogenesis of an incisional hernia is in general multifactorial.<sup>8</sup>

Recurrences after incisional hernia surgery are an unsolved problem to date. The reports in the literature range from 1% to 50%. The recurrence rate is correlated to the follow-up time and there are only few high-quality studies with a long-

term follow-up. It is generally accepted that the recurrence rate can be reduced by half at least with the use of synthetic meshes.<sup>9</sup>

Incisional hernias can range in size from very small to large and complex ones and appear as a bulge by the area of a previous surgical scar. Nearly any prior abdominal operation can develop an incisional hernia, however the most frequent site is along incisions running down from the breastbone to the pubic area. These hernias may occur after large surgeries such as intestinal or vascular surgery, but also after an appendectomy or even through the small scar of a laparoscopy wound. Surgical repair of incisional hernias is usually recommended, as they can become a medical or surgical emergency.<sup>10</sup>

An incisional hernia can be defined as complicated when the involved structures undergo worsening conditions. Particularly, the concerned structures may be described as follows:<sup>11</sup>

- 1) Cutaneous: large and thin scars, cutaneous atrophy and eczemas, suppurative flogosis, fistulae.
- 2) Hernial sac: multiple sacs, fibrous septa, sac thickening and adhesions.
- 3) Visceral: chronic incarceration, obstruction, strangulation, ileum and colonic torsion with progressive damage up to gangrene; greater omentum involvement, mesenteritis and perivisceritis.

The frequency of complicated incisional hernias varies from 10 to 40%. The most frequent complications are incarceration, obstruction and strangulation. Incisional hernia is protrusion of viscera through defect at surgical scar. Common sites of incisional hernias are midline incision, lower transverse incisions in gynecological operations. They are also seen in different sites of incisions on anterior abdominal wall. Complications seen are cutaneous atrophy and necrosis, hernia sac thickening and adhesions, obstruction, strangulation, enterocutaeneous fistula.<sup>12</sup>

In the international literature, more than 90% of patients with inguinal hernias are being treated with synthetic mesh implantation. Similar numbers may be expected for common incisional hernia surgery. According to the Herniamed register, only 10% of incisional hernia patients do not have a mesh implanted. For complex hernias, it may be assumed that none of the affected patients can be treated without any augmentation material at all.<sup>8</sup>

Mesh repair for incisional hernias using inlay technique is preferred in all cases except in cases where enterocutaeneous fistula is developed. Edematous fascial layer and tissue loss makes it difficult to anchor the mesh to abdominal wall. The sutures taken through the fascial layer cut through the fragile edematous tissue. Dissecting through the fascial layer becomes difficult leading to further tissue loss.<sup>12</sup>

**Conclusion:**

Complex incisional hernias are essentially characterized by the following: large hernia defect, large abdominal wall/soft tissue defect and/or enterocutaneous fistula, several hernias in anatomically distant locations, re-recurrence, loss-of-domain, close-to-bone or local infection. The repair of complex hernias is challenging. It requires a broad range of methods and often interdisciplinary cooperation. The rate of recurrence and wound complications is high. The treatment of complicated incisional hernias by intraperitoneal method is preferred as it has less-complications and less-chances of recurrences. In cases with enterocutaeneous fistula where infection is already settled and anatomical repair is preferred to mesh repair.

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