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Case Report: We present an extremely unusual case where the hernia sac had dissected a plane between anterior sheath and the rectus muscles. Surgical development of this plane is associated with great risk of damage to nerves and vessels therefore not commonly used in hernia repairs.

Conclusion: In this highly unusual case where traditional mesh placement was of little value, we chose a unique and as yet undescribed method of retro-anterior sheath mesh placement with good results at third month.

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CASE REPORT

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Keywords: Abdominal wall, Hernia, Hernia repair, Mesh

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INTRODUCTION

An abdominal incisional hernia is a defect in the abdominal wall at the site of previous surgery and occurs with an incidence of 15% [1]. This may result in the abnormal protrusion of any part of an abdominal viscus and can lead to incarceration and strangulation. In addition to technical failure, there are several factors that affect a patient's risk of developing an incisional hernia which include an elevated body mass index and advanced age [2]. Prior to the development of polymerized meshes, incisional hernia were repaired by primary closure. Sutured repairs had the disadvantage of a high recurrence rate [3]. Comparative studies have found a 10-fold increase in recurrence following sutured repair when compared to mesh reinforcement [4].

Techniques of ventral wall mesh reinforcement utilize the different anatomical layers of the ventral wall. The 'onlay' technique involves fixing the mesh to the anterior aspect of the rectus sheath, directly beneath Scarpa's fascia. It has a relatively high recurrence rate [5]. The 'inlay' technique, in which the mesh is secured to fascial edges between the two recti is best avoided due to the high rate of failure and need for re-intervention with quoted recurrence rates of up to 44% [6]. The 'sublay' technique of reinforcement is traditionally felt to be the technique with the most durable results. Documented recurrence rates are in the region of 3.6% [5]. In this

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repair, the mesh is placed between posterior sheath and rectus muscles. With the evolution of the laparoscopic era the 'intra-peritoneal onlay mesh' ('IPOM') has more recently documented durable repairs [1]; at present long-term recurrence and patient satisfaction data are awaited.

In this case report, we describe the acute presentation and subsequent management of an elderly lady with a complex ventral intraparietal incisional hernia. Conventionally, retro-anterior-sheath placement of a synthetic mesh in ventral wall hernia repair is not undertaken. The risk of damage to vascular and nerve perforators in this plane, between rectus muscles and anterior sheath, is generally felt to preclude a safe repair. However, in this unusual case, the herniation of the small bowel had almost completely dissected the anterior sheath away from the anterior rectus muscle. The result was the development of a plane that is normally inaccessible which can be easily accommodated synthetic mesh (Figures 1 and 2).

CASE REPORT

A 78-year-old female was admitted with a large irreducible right iliac fossa incisional hernia with associated features of bowel obstruction. The incisional hernia was a complication of a previous Pfannenstiel incision for an extended abdominal hysterectomy for an endometrial malignancy. At the time of admission she was awaiting an elective laparoscopic hernia repair.

Following initial presentation, assessment and resuscitation, a computed tomography (CT) scan was performed. The CT scan confirmed the clinical suspicion of an acutely incarcerated ventral incisional wall hernia with threatening bowel strangulation. She subsequently underwent an emergency laparoscopy. This was converted to a full midline laparotomy early in the procedure due to the presence of small bowel within the hernia sac too adherent to be safely mobilized laparoscopically. At a specific point over the incision the anterior sheath had a 5x6 cm hernia defect which contained chronically obstructed but viable small bowel. The hernial defect was found to pass between the widely separated recti muscles and had dissected the anterior sheath away from the recti. Ventral wall reinforcement was achieved by suturing the rectus abdominis muscles together and by securing a DynaMesh anterior to the anterior rectus abdominis muscle but behind the anterior rectus sheath. After excision of the hernial sac, the anterior sheath was primarily closed with polydioxanone (PDS), with two Redivac® drains (B. Braun Medical Ltd, Sheffield, U.K.) placed either side of the sheath in an attempt to reduce seroma formation, before finally closing the skin with clips.

Postoperatively, the patient recovered well, with no immediate complications and was discharged a few days after surgery. Review in outpatient department after one month revealed an excellent result with no evidence of

Figure 1: Preoperative computed tomography scan showing the hernia sac dissecting the anterior sheath from the left rectus muscle.

Figure 2: Preoperative computed tomography scan showing the widely separated recti muscles and the hernia passing through.

recurrence. A focal point of overgranulation and mild serous discharge was treated in clinic with a silver nitrate cautery stick. Further review at third months showed complete resolution of the discharge, a sound repair of the hernia with no evidence of recurrence. Additionally, the level of satisfaction was high and the patient was subsequently discharged.

In this case, we strayed from traditional techniques for open hernia repair with mesh reinforcement. We placed the mesh in a retro-anterior plane which, to the best of our knowledge, has not previously been done.

DISCUSSION

Incisional herniae are a well-recognized complication of abdominal surgery. Predisposing risk factors include technical failure, patient age, sex, elevated body mass index and diabetes mellitus [2], approaches to hernia repair and ventral wall reinforcement include both conventional open techniques and more recently, as skills

and mesh design have evolved, laparoscopic methods of hernia reduction and intra-peritoneal mesh placement have become more commonplace. A Cochrane review found no difference in incidence of recurrence when comparing laparoscopic to open repairs but did elucidate a reduction in wound infection rates with laparoscopic repairs [1]. However, some studies have reported an increased risk of bowel injury during laparoscopy [7].

The development of synthetic meshes has revolutionized hernia surgery and significantly improved recurrence rates and patient satisfaction [1, 3, 8]. In open repairs, ventral wall reinforcement with onlay, inlay and sublay meshes have varied results. A Cochrane review from 2008 found no significant difference in recurrence rate when comparing sublay and onlay mesh position. However, found the mean operative time to be shorter in the sublay position [9]. In contrast to this a meta-analysis comparing sublay to onlay mesh repair from 2014 found sublay to be slightly superior both with respect to recurrence rate and surgical site infections. 1,948 patients were included in the meta-analysis [8]. In a randomized controlled study from 2011, comparing sublay to inlay hernia repair, with 100 patients in each group, sublay was also found to be preferable when comparing recurrence rates and complications between the two groups [10]. In this case, plane obliteration precluded securement of mesh in the traditional planes. Sublay placement was not possible as the hernial defect was lower than the posterior sheath. Similarly, inlay was not considered an option due to the extent of hernial dissection of the fascial layers off the recti muscles. Onlay placement of a synthetic mesh was considered feasible. However, as the retro-anterior sheath plane needed little development compared to the “onlay plane” between subcuticular fat and the anterior sheath it was felt that the alternative placement of the mesh would be advantages in this instance. After searching literature, we have been unable to find any previous description of a mesh placement in this plane.

CONCLUSION

In this extremely unusual case, we found the more conventional option of hernia repair with mesh (inlay, onlay and sublay) to be of limited value and instead chose a unique and as yet undescribed method of retro-anterior sheath mesh placement with good and safe documented results at the third month.

Author Contributions

Susanne Irene Scott – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Achal Khanna – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published
Jonathan Guy Finch – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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