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CASE REPORT

A. A. Riaz · M. Ismail · A. Barsam · C. J. Bunce

Mesh erosion into the bladder: A late complication of incisional hernia repair. A case report and review of the literature

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Abstract Late complications of mesh repair are commonly due to mesh migration and erosion into neighbouring visceri. We report the first case of a mesh repair of a lower midline laprotomy incisional hernia complicated by erosion of the mesh into the bladder which presented as haematuria.

Keywords Mesh · Bladder · Erosion · Complication

Case report

A 57-year-old female was referred to the urology clinic with a history of two episodes of frank haematuria. This was painless in nature and not associated with frequency or dysuria. Of note in 1994, she had undergone a total abdominal hysterectomy, subsequently developing an incisional hernia at the inferior aspect of the wound, which was repaired. At the repair, a 4-cm defect in the midline was found. A 10×15-cm piece of mesh was shaped in an oval fashion to around 10×5 cm and placed with a sublay method and secured with proline sutures, 5 years prior to admission. The bladder was not identified at the hernia repair.

On examination, there was a solid 3-cm lesion arising just above the symphysis pubis which seemed to be related to the lower end of the midline scar. The rest of the abdominal examination and bloods were unremarkable.

She was seen in our one-stop haematuria clinic, and an ultrasound of the kidney, ureters, and bladder was normal. Furthermore, a flexible cystoscopy showed a suspicious lesion with mucous attached at the dome of the bladder. A CT scan showed a soft tissue lesion involving the anterior aspect of the bladder, which appeared to be in contact with the inner aspect of the anterior abdominal wall (Fig. 1). These appearances were suggestive of an urachal adenocarcinoma, and arrangements were made for an urgent transurethral resection of the bladder tumour with or without laparotomy.

A.A. Riaz and M. Ismail contributed equally to this paper

A. A. Riaz (✉) · M. Ismail · A. Barsam · C. J. Bunce
Department of Surgery,
Barnet General Hospital,
Wellhouse Lane,
London, Barnet EN5 3DJ, UK
E-mail: mrariaz@hotmail.com
Tel.: +44-0208-2164000
Fax: +44-0208-2164401

At surgery, a cystoscopy was performed, and a loop biopsy was sent for urgent frozen section. The histology showed granulation tissue only with no evidence of malignancy. We proceeded onto laparotomy, the findings were a 4-cm lump of hard inflammatory tissue associated with the hernia mesh at the lower end of the wound; this appeared have eroded into the dome of the bladder. The inflammatory mass along with the mesh was dissected out, and a portion of adherent bladder was excised. The bladder was closed in two layers with 2/0 vicryl. The omentum was mobilised and interposed between the bladder and posterior rectus sheath. The abdomen was closed with a continuous loop polydioxanone (PDS). A urethral catheter was inserted for 2 weeks. A cystogram was then performed, which demonstrated no leak. The patient made an uneventful recovery.

Histology of the bladder specimen demonstrated moderate intramural chronic inflammation. In addition, the dome of the bladder showed nodules of foreign-body inflammatory giant cell reaction to the mesh material with surrounding fibrosis. There was no evidence of malignancy.

Discussion

Usher, in 1959, who introduced the repair of large hernias using a nonreabsorbable polypropylene mesh, and

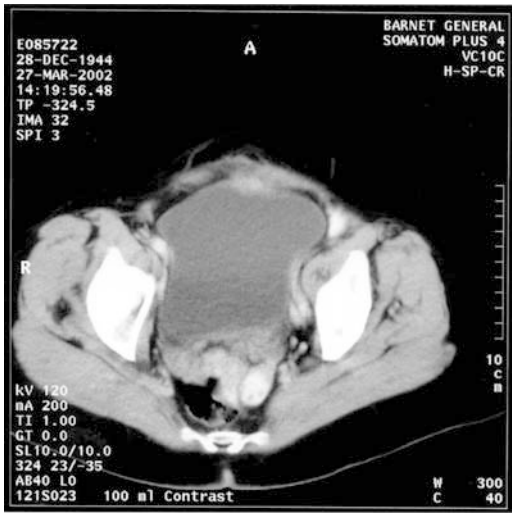

Fig. 1 CT scan of the abdomen showing an inflammatory lesion involving the bladder

Flum et al. [1, 2] showed over a 12-year period that the incidence of mesh repair for incisional hernias had significantly increased and that it was associated with a reduced recurrence rate. The use of mesh has significantly reduced the incidence of recurrence following repair. However, this is not without several complications, the most dramatic being migration and infection of the mesh.

Mesh can be applied using the onlay, inlay, and sublay techniques, which are differentiated by the position of the mesh in relation to the rectus sheath. These types of repairs can be associated with an increased incidence of early complications, such as infection, haematoma, and seroma formation, whereas later complications include mesh migration, erosion into associated structures, and abscess formations. Recently several cases have been highlighted with late occurrence of enterocutaneous fistula following abdominal wall repair [3, 4, 5, 6, 7].

Our case illustrates some very important points. The literature does not support the migration of the mesh through great distances; however, whenever a mesh is placed in close proximity to a viscus, it can erode easily. The pathophysiology behind this phenomenon is unclear. However, it may be that the cut edges of the mesh become sharp and damage the surface of the viscus and evoke an inflammatory reaction, thereby leading to a weakness and erosion. Furthermore, improper placement of sutures, to keep the mesh in place, through nearby organs could lead to the mesh eroding through. However, we do not feel that the latter point is relevant to our case, as we would have expected problems much earlier, rather than after 5 years. We feel that mesh migration is a real possibility and more work needs to be done on this subject. Our case is one of the first reported cases in the English literature in which a mesh for incisional hernia repair has migrated, eroding into the bladder, thereby presenting with frank haematuria. The diagnosis was complicated by the unusual presentation and symptoms and the length of time from the original hernia repair with mesh.

This case highlights several important features, many of which may improve the management of these patients. Importantly, this case clearly highlights that complications following mesh repair can occur many years after the initial operation, and our patient had the repair done 5 years prior to presentation. Furthermore, she only reported the mesh repair in the history after being pressed on the issue. Patients into whom we are inserting mesh need to be told and fully informed about their procedure and potential complications.

Migration of mesh has long been recognized as a potential complication of this procedure; however, the anatomical structure of the rectus sheath makes it more likely in our case [5, 6, 7]. The rectus sheath is deficient posteriorly below the arcuate line. Hence in the sublay technique, there is no fascial layer between the mesh and the bladder, thereby predisposing to a migration and fistulation. Migration of mesh is more likely if the mesh is applied with an inlay or sublay technique rather than an onlay method. Indeed, it is thought that both the inlay and sublay are anatomically more tension-bearing compared to the onlay; however, we feel that they are more prone to mesh migration.

Although mesh repairs have many advantages, it should not be forgotten that they can be associated with significant complications. The authors recommend that we avoid the insertion of a mesh if at all possible, as apart from the complications mentioned above, it is well known in evoking an inflammatory reaction. Furthermore, one should avoid cutting the mesh, as this leads to the formation of sharp edges, and careful placement of sutures, avoiding nearby viscus, is important.

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