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Inflammation and infection

Migration of an abdominal mesh into a reconstructed ileal neobladder, diagnosis and management: A case report

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A B S T R A C T

Migration of an abdominal mesh is a very rare complication. Few reports have described migrations to the bowels and to the urinary bladder but none reported the migration into an ileal bladder. This case report describes an extremely rare but possible migration of abdominal mesh into the lumen of the neobladder. We present a case of a 65 year old male patient who had an abdominal mesh migration into a reconstructed ileal neobladder. The management was done over two parts with endourology laser assistance and open approach. The report shows the possible causes and ways of management of this complication.

Introduction

Incisional hernia is the most common complication of abdominal surgery, with an incidence up to 10–15% and recurrence rates of 20–45%.[1] Radical cystoprostatectomy with ileal neobladder became the standard surgery for patients with muscle invasive bladder urothelial cancer and considered a high risk surgery with up to 20% of patients developing incisional hernias following surgery.[2] A recent randomized controlled trial showed a significant decrease in the incidence of incisional hernias after high risk midline laparotomies using prophylactic onlay mesh reinforcement.[3] Migration of an abdominal mesh is a very rare complication. Few reports have described migrations to the bowels and to the urinary bladder but none reported so far the migration into a reconstructed ileal bladder.

Case presentation

A 65-year-old patient presented for the management of a muscle invasive urothelial bladder cancer with radical cystoprostatectomy and Hautmann neobladder reconstruction. A post-operative day12 hemorrhagic shock followed and the patient was reoperated urgently. A large hematoma was evacuated. The abdomen was closed over a vicryl hernia mesh (30 × 26 cm) placed intraperitoneally. Investigations showed the presence of Von-Willebrand disease. Six months after the surgery, the patient represented for management of urinary tract infection (UTI). After 3 and 12 months, the patient presented with recurrent UTIs and the second time an abdominal-pelvis computed tomography scan was ordered. The scan showed a migrating textile foreign body entering into the Hautmann neobladder (Fig. 1). The patient was scheduled for flexible cystoscopy that showed erosion of the anterior wall with visualization of part of a textile foreign body in the bladder. A trial of removal with foreign body forceps was unsuccessful. A follow up scan showed the migration of the majority of the foreign body into the neobladder.

Treatment

Cystoscopy (22Fr) showed a white foreign body mesh-like material with several folds. With the assistance of a ureteral catheter, a laser fiber(220μm) was used to cut the mesh (Fig. 2) on 1.2J energy and a frequency of 8 Hz with meticulous attention to the neobladder mucosa. Multiple trials were done removing several parts of the migrating mesh with forceps. Most of the time the procedure was done with no saline irrigation to prevent increased pressure inside the neobladder. The procedure took 4 h. No injury of the mucosa was noted. The anterior part of the mesh could not be reached. An open approach was necessary given the fact that there remained an extravesical part of the mesh.

After six days, the patient was revisited in the OR with a sub-umbilical laparotomy. The mesh was directly identified as the anterior rectus fasica was opened. The mesh was released superiorly and followed inferiorly to identify its tract into the neobladder. (Fig. 3). A flexible cystoscopy was done from the breach to ensure that no debris was left. The closure of the well approximated edges was done with a vicryl 2.0 sutures in a separated manner. The bladder was tested with no leak identified. Closure of the anterior rectus fascia was done with vicryl 1 sutures in a separated manner(point en X). The procedure took 75 minutes. The foley catheter was removed three weeks later and no complications were reported.

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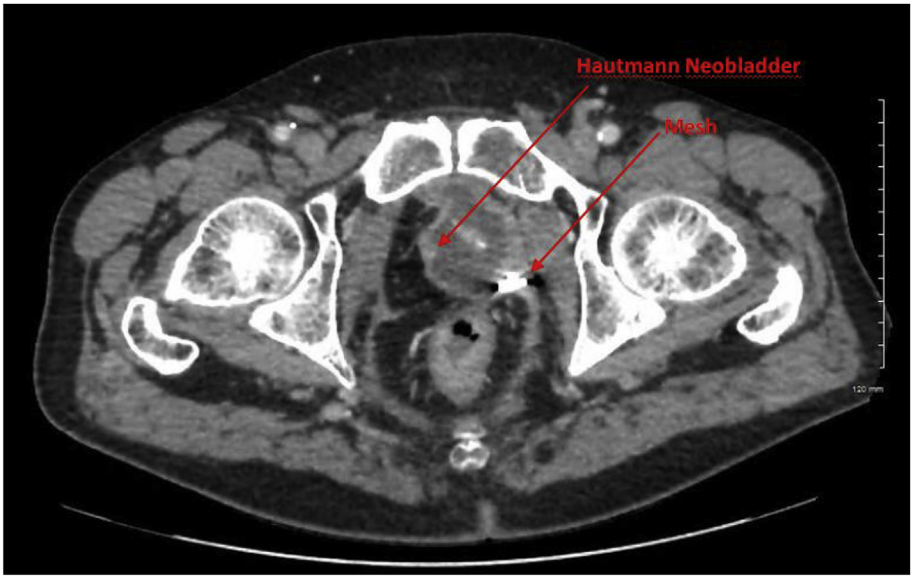

Fig. 1. Pelvis computed tomography scan showing the entry of the mesh into the Hautmann neobladder.

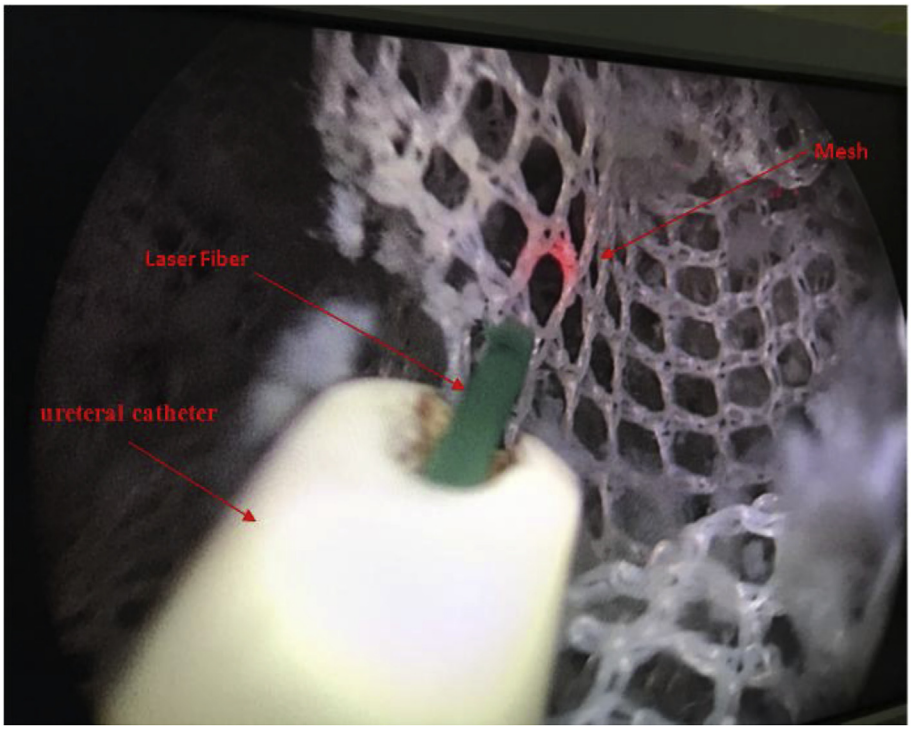

Fig. 2. Laser fiber used to cut the mesh.

Discussion

This case report described an extremely rare but possible migration of abdominal mesh into the lumen of the neobladder and its possible management.

Complications of the mesh insertion include hematoma, seroma, foreign body reaction, organ damage, infection, mesh rejection, and fistula formation. Cases of mesh migration to a normal urinary bladder and to different bowel segments were reported. Up to our knowledge, this is the first reported case of a mesh migration into a neobladder.

Most reports described the migration as a late complication taking between three and five years after ventral herniorrhaphy. Our case differs in the rapidity of migration after surgery. This could be explained by the fact that an ileal neobladder is thinner than a normal bladder. In addition, the anastomosis and the possibility of an ischemic region with focal weak point could explain the migration.

A minimally invasive approach was chosen knowing the potential risks of opening a morbid patient and to have a final diagnosis of this textile non-conclusive foreign body nature. The mesh was ultimately not possible to be removed without a mini laparotomy incision.

This report should stimulate urologists for a cystoscopy when there is clinical image of recurrent UTIs or gross hematuria after such surgery. It must be optimized since a clear diagnosis could sometimes be hindered by the presence of mucous or clots in a neobladder.

This case shows the capacity and safety of Holmium laser in cutting vicryl surgical material when used in a neobladder without any signs of

Fig. 3. Abdominal mesh removed in one piece.

hematuria after 4 h making it an interesting option when the size of the mesh is smaller and uniquely intravesical.

In general, hernia meshes are divided into non-absorbable synthetic meshes, partially absorbable synthetic meshes, combined material meshes, and biological meshes. Polygactin (vicryl) meshes are classified in the partially absorbable group and gives very minimal reaction with rare adhesion formation. Classical meshes like polyester and polypropylene are classified as synthetic non absorbable and are known for the rigidity and comfort they provide. Biological meshes show a great promise in hernia repair but surgeons are reluctant to use them with reports suggesting increased risk of long term recurrence, higher cost, and no clear benefit in comparison to classical used meshes.

Two possible mechanisms for mesh migration were proposed: primary mechanical migration and secondary migration as a result of erosion of the surrounding tissue.[4] In our case, a combination of both mechanisms might explain the migration with an initial mesh displacement followed later by erosion into adjacent tissue.

The nature of the mesh biomaterial may affect erosion. Samli et al. showed that the highest rate of mesh penetrating the bladder muscularis propria at 14 days was noted in the polypropylene mesh group.[5] The results suggest that the use of polypropylene mesh risks serious postoperative complications. In our case, the used mesh was a polygactin mesh. This might suggest that migration into a neobladder could be easier even for polygactin mesh.

Conclusion

This case report presents a devastating complication that should be carefully managed. The initial management plan was to try to be as minimally invasive as possible but the necessity of an open surgery was inevitable with a mesh of such size that was partially extra-vesical. The report shows the necessity to use foreign material just when needed, at the minimum even with tested and proven safe products. This includes proper selection of mesh material, size, shape and method of fixation.

Declarations of interest

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2019.100846.

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