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Use of Polypropylene Mesh for Abdominal Wall Defect in Surgery of Advanced Urachus Carcinoma

H.	Hiroji	Uemura
Y.	Yuhzo	Kinoshita
Y.	Yoshinobu	Kubota
T.	Taro	Shuin
M.	Masahiko	Hosaka

Department of Urology, School of Medicine, Yokohama City University, Yokohama, Japan

Key Words

Urachus Carcinoma
Polypropylene mesh
Abdominal wall reconstruction

Abstract

We report a case of urachus carcinoma in which the resulting abdominal wall defect was reconstructed during surgery with an artificial polypropylene mesh. The use of the mesh made it easier to resect the tumor more radically, even in an advanced case.

Hiroji Uemura, MD, Department of Urology, Yokohama City University Hospital, 3-46 Urafune-cho, Minami-ku, Yokohama 232 (Japan)

Introduction

Carcinoma of urachus, which arises from the vestigial allantois, has a tendency towards progressive infiltration of the abdominal wall from the early stage of growth [1]. Excision of the tumor, therefore, usually involves the muscles of the abdominal wall. Insofar as the tumor is confined to the inner layer of the rectus abdominis, it may be possible to resect the tumor while conserving the outer layer of the muscles and, at least, the anterior rectus sheaths. In the case of the tumor extending deeply into the muscles, however, the conservation of the abdominal wall may be difficult at extirpation surgery. We report a case of urachus tumor in which we performed a more radical resection of the tumor by using an artificial polypropylene mesh for the reconstruction of the abdominal wall defect.

Case Report

A 42-year-old man presented at Yokohama City University Hospital in February 1986, complaining of lower abdominal pain. Physical examination revealed a tender suprapubic mass, approximately 3×7 cm in size. Urinalysis showed microscopic hematuria. The excretory urogram revealed a normal upper urinary tract. Cysto-scopy showed a sessile non-papillary tumor in the vertex of the bladder. Computerized tomography as well as ultrasonography indicated that the tumor not only extended outside the bladder wall but also invaded deep into the rectus abdominis muscles (fig. 1). Transurethral biopsy of the bladder lesion showed it to be adenocarcinoma of urachal origin. In May 1986, total cystectomy in combination with partial resections of bilateral rectus abdominis and

pelvic lymphad-enectomy was carried out to attain en bloc removal of the tumor. Resection also included the anterior rectus sheaths, the upper part of the symphysis pubis, urachus remnant, umbilicus and peritoneum. The resulting defect of the lower abdominal wall, was finally about 8 × 10 cm in size. The peritoneum was primarily closed and, then, we closed the fascial layer defect using a patch of polypropylene mesh (Marlex mesh). The mesh was fixed to the anterior surface of the rectus sheaths with 2-0 proline monofilament interrupted sutures 1 cm inside the edge and running sutures around it (fig. 2). Ostia of the bilateral ureterocutaneostomy were placed sufficiently distant from the mesh.

Histological examination of the tumor revealed a mucus-forming adenocarcinoma (fig. 3) and metastases in bilateral obturator lymph nodes. The drainage tubes placed on the mesh and deep into the pelvis were removed on the 7th and the 10th day, respectively. A minor subcutaneous abscess, which developed in front of the mesh 3 weeks postoperatively, merely required open drainage and reclosure of the incised skin. The patient then received two courses of combination chemotherapy with 5-fluorouracil, methotrexate, vincristine, bleomycin, cyclophosphamide and mitomycin C. During the 6-month follow-up, he was in a disease-free state and no problems arose from the mesh graft.

Discussion

Carcinoma of urachus is a highly malignant disease in which the 5-year survival rate is estimated to be 15–25 % [2, 3]. Radiotherapy and chemotherapy have been used as adjunct to surgical treatment but, in most surveys, the

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Fig. 1. Pelvic CT scan shows the tumor extending from the bladder to the rectus abdominis.

Fig. 2. The polypropylene mesh is seen under the drainage tubes.

Fig. 3. Photomicrograph shows well-differentiated mucinous ad-enocarcinoma.

results were discouraging [1, 3]. Since local recurrence and spread to the regional lymph nodes are frequent [3], surgery should be as radical as possible. The en bloc removal of the tumor with the bladder and the soft tissues of the abdominal wall and pelvic lymph node dissection seems to be the best choice of treatment to date [1, 4]. As a result of extensive resection, however, as in our case, a large defect may remain in the midabdominal wall. We used a polypropylene mesh for the repair of this defect and obtained a satisfactory result. Polypropylene mesh is commonly used for the reinforcement of the abdominal and chest walls. As in the other reports [1, 5], the mesh graft showed considerable resistance to wound infections and had adequate tensile strength as a prosthesis for the abdominal wall defect. The mesh also has the advantage of radiolucency so that it did not disturb the follow-up radiological surveys. Therefore, in the surgery of urachus carcinoma, the use of this mesh is a convenient method of reconstruction of the abdominal wall, enabling us to carry out more extensive and radical resections of the tumor.

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