

Effective Treatment for Recurrent Perigraft Seromas of Upper Arm Polytetrafluoroethylene Grafts: Report of Two Cases

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Among the possible complications of hemodialysis polytetrafluoroethylene (PTFE) graft creation, perigraft seromas are rare, but sometimes troublesome. Debridement with drainage is usually the method of treatment. However, recurrence is not unusual. Herein we describe 2 cases of recurrent perigraft seroma treated by a simple but effective surgical method: excision of the pseudocapsule and revision of the arterial inlet. This method converted the brachial artery to axillary vein dialysis graft into an upper arm axillary artery to axillary vein loop bridge graft and eliminated the seroma. No recurrence was noted after a 4-month follow-up period. This surgical method may be a simple and effective solution for dialysis graft seromas. (*Chang Gung Med J* 2003;26:440-3)

Key words: dialysis graft, perigraft seroma, pseudocapsule, graft revision.

Perigraft seromas have been reported as complications of polytetrafluoroethylene (PTFE) vascular grafts for Blalock-Taussig shunt creation,⁽¹⁾ arterial bypass surgery,^(2,3) and dialysis access surgery.^(4,5) PTFE vascular grafts have been used for hemodialysis access creation for end-stage renal disease patients for a long time. Among the possible complications of prosthetic vascular graft implantation, perigraft seromas are rare but rather troublesome. A seroma is a collection of sterile, clear ultrafiltered serum, surrounded by a soft tissue pseudocapsule. Although many seromas remain stable for a long time, some may progress and lead to prosthesis thrombosis or infection. Sometimes they cause loss of the available puncture area of the graft and require surgical treatment. Many different methods for dealing with seromas have been proposed in the past. However, recurrence of seromas after surgical intervention is still a troublesome clinical problem. Herein we describe 2 cases of recurrent seromas successfully treated by pseudocapsule resection plus

prosthesis arterial inlet revision, which is a rather simple and straightforward surgical method.

CASE REPORTS

Case 1

The patient was a 67-year-old woman with end-stage renal disease on regular dialysis. A right upper arm brachial artery to axillary vein bridge 5-mm stretch PTFE graft had been implanted for vascular access because of previous failure of a forearm loop graft. A perigraft seroma gradually developed around the arterial anastomosis after the operation. Ten months later, although the graft was still functioning, surgical management of the seroma was performed. Drainage of the seroma and resection of the pseudocapsule were performed twice within a 2-month period. Unfortunately, the seroma recurred soon after surgery and progressed with time. Due to the gradual enlargement of the mass and diminished puncture area of the graft, another operation was

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Received: Sep. 13, 2002; Accepted: Nov. 20, 2002

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arranged to deal with the problem 24 months later. The pseudocapsule of the seroma and the transuding proximal segment of the prosthesis on the arterial side were resected (Fig. 1). Another segment of the PTFE graft was implanted between the old graft and her axillary artery for a new artery inlet, thus converting the original curved bridge graft into an upper arm loop bridge graft (Fig. 2). After complete hemostasis, the skin was properly trimmed, and the wound was closed with no drainage tube left in the wound. The patient immediately resumed hemodialysis via the old prosthesis and was uneventfully discharged the day after surgery. We have followed up the patient for over 4 months with no evidence of recurrence of the seroma.



Fig. 1 Transuding segment of the PTFE graft resected with the seroma pseudocapsule as a whole, thus decreasing the chance of recurrence.

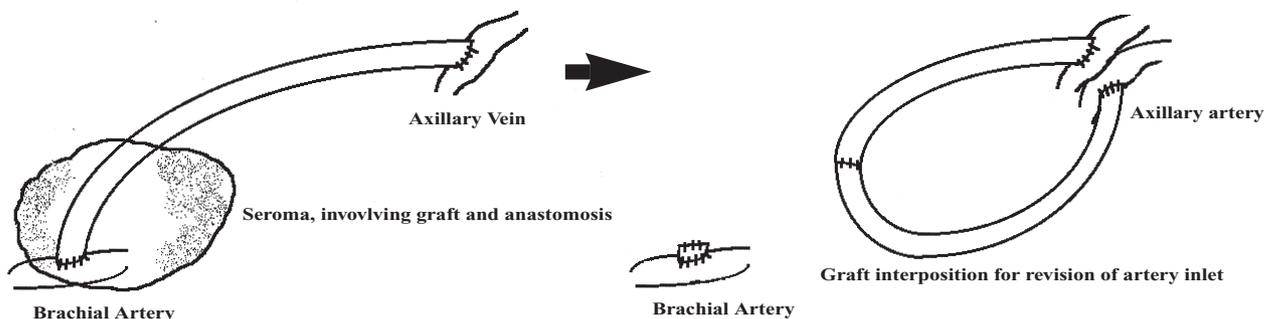


Fig. 2 Perigraft seroma with the involved graft completely resected followed by revision of the arterial inlet from the axillary artery, thus converting the graft into a loop-shaped bridge graft.

Case 2

The second patient was a 64-year-old woman also with end-stage renal disease on regular dialysis. Her left upper arm brachial artery to axillary vein bridge 6-mm stretch PTFE graft had been implanted for vascular access for 10 months with no problems. However, during an emergent thrombectomy for acute occlusion of the graft, a 3-cm-diameter seroma was discovered. Due to progressive enlargement of the seroma after the thrombectomy, debridement and drainage of the seroma were performed. Unfortunately, recurrence of the seroma with progression in size to 8 cm in diameter was noted soon after the operation. We thus resected the pseudocapsule with revision of the artery inlet of the graft 2 months later. The graft was uneventfully converted to an upper arm loop dialysis graft. The patient was followed up for over 6 months with a patent graft and no recurrence of the seroma.

DISCUSSION

PTFE prostheses are widely used for vascular access for hemodialysis in patients with no suitable superficial vein. Among possible complications associated with PTFE graft implantation, seromas are less well known, rare, and clinically troublesome. Perigraft seromas have been reported with procedures such as a modified Blalock-Taussig shunt, peripheral arterial bypass, and dialysis access using prosthetic grafts. The etiology of seromas is uncertain. Several predisposing factors such as heparin use, glucocorticoid use, extensive dissection during

the procedure, and excessive handling causing graft injury have been postulated for this condition. The incidence of perigraft seromas with dialysis PTFE grafts was reported to be as low as 2%.⁽⁶⁾ Although most seromas around dialysis grafts remain stable and free of complications for a long period of time, surgical intervention may sometimes be indicated due to progressive enlargement of the mass or loss of graft puncture area.

Drainage of the seroma content with or without removal of the pseudocapsule has been the most popular surgical technique adopted by surgeons.⁽³⁾ Other surgical techniques, including topical wrapping or application of different materials such as microfibrillar collagen or a collagen hemostat, have been sporadically reported.^(7,8) However, recurrence of seromas is not unusual due to the remaining segment of the transudating prosthesis. Replacement of the graft with an umbilical vein, homograft iliac artery,⁽⁹⁾ or saphenous vein grafts⁽¹⁰⁾ has been reported in small series or isolated case reports with satisfactory results. It seems reasonable that excision of the transudating segment of the prosthesis as well as total removal of the pseudocapsule are mandatory for preventing recurrence of a seroma.

In the present report, we describe a simple and successful procedure to deal with recurrent perigraft seromas of dialysis grafts. Both of our patients were previously treated with multiple debridement and drainage of their seroma. Finally we solved the difficult problem by simply excising the pseudocapsule with revision of the artery inlet from the axillary artery. The upper arm curve-shaped dialysis graft was thus converted to an upper arm loop-shaped graft without compromising the dialysis function.

Usually, perigraft seromas of brachial axillary dialysis grafts are located around the arterial end of the PTFE prosthesis.⁽¹¹⁾ Thus we performed excision of the transudating segment of the proximal prosthesis and revised the graft with the implantation prosthesis from the axillary artery to the previous graft's proximal end. After the procedure, the brachial-axillary dialysis graft was converted to an axillary-axillary loop-shaped bridge graft. Hence the seroma sac was excluded from the prosthesis route. The chance of recurrence was thus reduced by complete excision of the transudate source. In addition, removal of the pseudocapsule of the seroma plus postoperative com-

pression of the seroma sac may have enhanced the healing process of the wound. In our experience, no suction drain placement was required.

Because only part of the prosthesis was resected, cannulation for hemodialysis was possible immediately after surgery at the original prosthesis segment. No temporary double lumen catheter for dialysis was required either. The procedure is simple and straightforward, and no vein graft harvest is needed. We recommend this simple method of dialysis graft artery inlet revision with pseudocapsule removal as an effective treatment modality for brachial-axillary prosthesis perigraft seromas.

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復發之人工血管旁漿液瘤的外科處理：二例報告

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洗腎用人工血管術後的併發症之中，血管旁漿液瘤 (perigraft seroma) 雖然少見，但卻不好處理，並可能造成感染，瘻管阻塞及洗腎不易。最常用的處理方式即是手術清創及引流，但是復發的可能性不低。本病例報告提出了兩例人工血管週圍漿液瘤，皆是多次手術後再復發的案例。二者經切除漿液瘤的假性內膜 (pseudocapsule)，加以人工血管進血端之改道手術，成功的治療了漿液瘤，追蹤了四個月皆無復發。本報告描述了洗腎用人工血管旁漿液瘤的一個有效且簡單的處理方法。(長庚醫誌 2003;26:440-3)

關鍵字：人工血管，血管旁漿液瘤，洗腎通路。

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受文日期：民國91年9月13日；接受刊載：民國91年11月20日。

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