Successful Surgical Treatment of Methicillin-Resistant Staphylococcus Aureus (MRSA) Vascular Graft Infection

Arifi M.
Vascular Surgery Department, Tripoli Medical Center
Tripoli, Libya

Declaration of Interests. No conflict of interests declared.

Abstract:
A 54-year-old man was referred to our hospital because of a false aneurysm in his right groin following Aortobifemoral and femoropopliteal bypass surgery. He underwent false aneurysm repair and infrainguinal arterial reconstruction. He then developed MRSA sepsis in the right groin. The patient underwent a number of operations to remove the infected grafts and distal revascularization to allow limb salvage. His last operation was an iliofemoral bypass via extra-anatomical route, from just below the iliac crest into the popliteal artery using an 8 mm-ringed polyester gelatin polypropylene tube graft, with complete debridement of a groin infection. Postoperative duplex scan and 3-dimensional CT angiography revealed a patent prosthetic graft and the patient made uneventful postoperative recovery. We conclude that this extra-anatomical bypass is a safe technique and a good option for patients with an infected vascular prosthetic graft in the groin after previous revascularization.

Key Words: MRSA; vascular prosthetic graft infections, groin wound infection, iliofemoral bypass, extra-anatomical bypass

Introduction:
Prosthetic vascular graft infections are one of the most serious and life-threatening complications and range from 2 to 6% despite the routine use of systemic prophylactic antibiotics and successful revascularization. The mortality and amputation rates of prosthetic vascular graft infections are up to 20 and 57%, respectively. The proper management of patients with vascular prosthetic graft infections in the groin continues to be difficult and controversial. We report a successful treatment for Methicillin-resistant staphylococcus aureus (MRSA) infection following infrainguinal arterial reconstruction using the right limb of the previous Aortobifemoral bypass graft as an inflow source for a new extra-anatomical bypass from just below the iliac crest level into the Popliteal artery.

Case Report:
A 54-year-old man who had undergone an Aortobifemoral and above knee femoropopliteal bypasses using an ipsilateral great saphenous vein 8 years ago for critical ischemia of his right leg. He was referred to our institution because of a painful and enlarging false aneurysm in his right groin. The later was found to be leak at the time of surgery. It involved both the anastomosis of the aortic graft right limb with the femoral artery and the anastomosis of the vein graft with the later vessel (Figure 1). Surgical repair was in the form of an inverted Y shaped prosthetic graft joined proximally to the aortic graft right limb at the inguinal ligament level with one of the two limbs of the graft anastomosed to the profunda femoris artery, which eventually occluded, and the other limb to the proximal end of the femoropopliteal vein graft (Figure 2).

The groin wound was closed primarily. Over the next few weeks patient was took back to theatre on urgent basis because of a recurrent massive arterial bleed from the right groin due to an infective perforations in the proximal part of the femoropopliteal vein graft, proved...
Successful Surgical Treatment of MRSA Vascular Graft Infection

Figure 2: Interposition prosthetic graft

Figure 3: Interposition graft extended

Figure 4: Most of the vein graft is now replaced with a prosthetic graft

Figure 5: Two abscesses related to the vascular graft.

Patient made a smooth recovery afterwards and apart from a small groin sinus, which failed to heal on conservative measures, all his wounds healed up nicely. He was allowed home on antibiotics to be followed up closely in the clinic. Few weeks later he presented as an emergency feeling unwell, looking pale and toxic. He was found to have two abscesses related to his vascular graft, one in the groin and another one in the thigh (Figure 5).

The abscesses were incised, drained and a decision was made to remove the whole prosthetic graft. The leg was revascularised using the contra lateral Great Saphenous Vein tunneled laterally and anastomosed to the right limb of the aortic graft, well above the inguinal ligament in the retroperitoneal space proximally, and to the above knee popliteal artery distally (Figure 6).

Two weeks later the patient developed a large false aneurysm, above the inguinal ligament, at the proximal anastomosis site (Figure 7). A decision was made to exclude the groin completely to prevent new graft contamination and revascularise the leg using a prosthetic graft, tunneled in the retroperitoneal space well away laterally below the iliac crest and then underneath the lateral part of the inguinal ligament, anastomosed to the aortic graft proximally and to the mid portion of the vein graft in the thigh distally (Figures 8 and 9). The Patient
Successful Surgical Treatment of MRSA Vascular Graft Infection

Arifi M.

Figure 8: The groin false aneurysm is completely excluded, to prevent new graft contamination, and the leg revascularised using a prosthetic graft, tunneled in the retroperitoneal space well away laterally below the iliac crest.

Figure 9: After the Aortic graft was used as an inflow source via a retroperitoneal, the iliofemoral bypass passed through the lateral femoral muscle just below the iliac crest to prevent a septic groin.

made a good and smooth postoperative recovery. He is being followed up for more than two years now without any problems and running a normal life.

Discussion:

Incidence of graft infection after arterial reconstructive surgery lies within the range of 0.5 to 26%. (1,2,3) In last decade, proportion of graft infection with Methicillin-resistant Staphylococcus aureus (MRSA) has increased. (4) MRSA graft infection is one of the most serious complications after vascular surgery because its mortality rate is exceedingly high. It is associated with high amputation and mortality rate especially Szylagyi type III graft infection. (5,6) It had been reported that MRSA infection after infrainguinal bypass resulted in 29% mortality due to MRSA sepsis or anastomotic bleeding.

References: