RUPTURED FEMORAL VEIN

A COMPLICATION OF THE USE OF GENTAMICIN BEADS IN AN INFECTED
EXCISION ARTHROPLASTY OF THE HIP

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Despite widespread use of gentamicin beads in the treatment of chronic infections of bone and soft tissue, no serious complications have been reported.

This report describes a rupture of the femoral vein which occurred during the attempted removal of a chain of beads after radical excision of a chronically discharging Girdlestone arthroplasty. The patient later had a disarticulation at the hip. In the light of our experience with this and other cases we offer some suggestions as to the positioning of gentamicin beads, as well as the timing and method of their extraction.

Infection after a total hip replacement is often disastrous (Hunter and Dandy 1977). When all else fails, conversion to an excision or Girdlestone arthroplasty may be the only possible treatment; but this is not without problems, particularly those of delayed healing and chronic discharge (Clegg 1976; Petty and Goldsmith 1980; Bittar and Petty 1982). Surgical treatment of a chronic discharging excision arthroplasty involves radical and meticulous removal of infected soft tissue, dead bone and remnants of bone cement, followed by closed continuous irrigation of the wound or, as advocated in recent years, by temporary packing of the cavity with chains of polymethylmethacrylate beads impregnated with gentamicin. The use of these beads in the treatment of chronic infection of bone and soft tissue has been reported widely (De Groote et al. 1979; Jenny and Taglang 1979; Klemm 1980; Grieben 1981; Shipley, van Meerdervoort and van den Ende 1981; Vécezi and Starlinger 1982).

To date no significant complications, other than failure of removal of beads, have been published. We report a serious complication which eventually resulted in amputation of the limb.

CASE HISTORY

A 68-year-old man was readmitted for the sixth time in December 1982 with an exacerbation of a painful, chronically discharging right Girdlestone arthroplasty.

In 1972 he had had a right total hip replacement which required removal two years later because of infection. At this latter operation great difficulty was experienced in clearing the femur and pelvis of bone cement and some cement was eventually left in situ. During a stormy postoperative course he required an emergency laparotomy, developed severe pseudomembranous colitis and had dehiscence of his hip wound in which infection persisted. He slowly recovered and was able to walk with one stick.

Over the next seven years he had a constant discharge from a sinus in the main wound, which was on the lateral aspect, and also an intermittent discharge from a sinus in the groin. Both were explored and excised or curetted on four separate occasions. Eventually, tired of the unpleasant smell, daily dressings and considerable pain, he requested a radical attempt to cure the infection.

On December 9 1982, an exploration and radical excision of his infected Girdlestone arthroplasty was carried out. The lateral sinus led down to retained cement in the femur, the medial sinus to a retained cement plug in a pubic keyhole in the acetabulum. All cement, dead bone and scar tissue were excised. Four chains of gentamicin beads were packed loosely into the main wound; one of these chains was brought up through the medial sinus track to lie in the wound in the groin. His postoperative recovery was uneventful and the discharge ceased, the wound healing primarily.

Four weeks after they had been inserted the beads were removed by a different surgeon. The main wound was opened and three chains removed without much difficulty. The fourth chain was no longer visible or palpable in the healed groin wound and could not be removed through the main wound despite traction which caused the chain to snap. Blunt finger-dissection round the chain in the depth of the most medial part of the wound cavity produced profuse venous haemorrhage and

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the wound was packed. Immediate exploration of the femoral vein through a separate incision was carried out by a vascular surgeon, who decided that repair of a large posterior hole in the vein was not indicated in the presence of a large cavity which was likely to become secondarily infected. The femoral vein was therefore ligated. The remnant of the chain was left in situ.

After operation the large wound became secondarily infected, the leg remained grossly swollen and the patient's condition gradually deteriorated. On January 25 the leg was disarticulated at the hip. The wound healed primarily and the patient made a rapid recovery to excellent health. He has declined to wear a prosthesis.

DISCUSSION

The mainstay of treatment for chronic osteomyelitis is meticulous excision of scar tissue and dead material. Gentamicin beads provide a useful adjunct to such radical excision. The cavity produced by sequestrectomy and excision of dead and infected bone in the treatment of chronic osteomyelitis is a well-defined one and, provided the beads are removed within three or four weeks, there is usually no difficulty with their extraction. Even if they have been left in situ for up to three months, their removal, though more difficult, is usually free from serious complications other than that of leaving a number of beads behind. This is not an inconsequential complication as once all the gentamicin has leached out of the beads they may themselves become a nidus of infection (hence the wisdom of removing them).

After radical excision of an infected excision arthroplasty, however, a large and ill-defined cavity remains, pockets of which may project deeply into otherwise normal tissues, particularly if there were sinuses discharging from sites other than the main wound. When the beads are removed these cavities have become even less well-defined and it is easy to imagine the damage which may inadvertently be caused by injudicious traction on them, or by blind dissection round them. Damage is more likely to occur if the surgeon removing the chains is not the person who inserted them.

In the light of our experience with the use of gentamicin beads in this and other patients, and in conjunction with a review of the literature, we offer a number of recommendations. The beads should always be inserted in a manner that will not complicate their eventual removal. The chains should not be kinked or snagged and should not be coiled tightly into deep cavities; in such situations the beads should be coiled very loosely or laid straight. Every attempt should be made to avoid soft tissues being entrapped by the beads. Chains which are passed down sinus tracks should be left clearly protruding through the incision or through separate stab incisions.

The chains should be removed by gentle straight traction in the line in which they were inserted, and with due consideration for the intervening soft tissues. Beads in soft-tissue cavities may be removed progressively, a few beads being withdrawn on alternate days; if they are withdrawn all at once, anaesthesia is required. Whichever method is preferred, the beads should not be retained for more than three weeks. In single-stage removal, blind dissection deep in soft tissue is hazardous; if beads are trapped it is better to extend the incision. A pre-operative radiograph in two planes may be advisable and the beads should be removed by the surgeon who inserted them.

REFERENCES


