

UPDATE ON MANAGEMENT OF CHRONIC OSTEOMYELITIS: REPORT OF FOUR CASES
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UPDATE ON MANAGEMENT OF CHRONIC OSTEOMYELITIS: REPORT OF FOUR CASES

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SUMMARY

Pessimism has existed concerning the cure of patients with chronic osteomyelitis. This has been based on the lack of complete bone and soft tissue debridement in the face of inability to completely cover the resultant wound with adequately perfused tissue. Regional and distant tissue transfers, allow freedom of debridement based on tissue viability rather than on amount of local tissue available to close the wound. Four cases in which regional and distant flaps were used to close defects created after debridement are presented. An overview of reconstruction of such defects is discussed. It is concluded that early management of compound fractures particularly those that require reconstruction will prevent the development of chronic osteomyelitis and thereby undue morbidity.

INTRODUCTION

Chronic osteomyelitis occurs as a result of blood borne infection from a primarily focus, and after infection of devascularised or devitalized bone as in trauma, and in haemoglobinopathy. The bones most commonly affected are the tibia, femur, humerus, radius and ulna. Less commonly, the skull bones, mandible, following dental abscess, sternum, following median sternotomy for cardiac surgery and thymectomy, are involved. The aetiology has shifted from a primary infectious origin to trauma with increasing morbidity both in the developing and in the developed world. Four cases managed in conjunction with orthopaedic, maxillofacial and cardiothoracic surgery units are presented.

CASE REPORTS

Case 1: Master I, nine year old boy, was referred to plastic surgery on account of a discharging wound of right leg with an underlying tibial osteomyelitis in June 1992. This he had acquired as a progression of pyomyositis and septicaemia. Under antibiotic cover, he had upper one quarter of the tibia debrided along with overlying sinus and surrounding tissue. A soleus muscle flap covered with a skin graft was transferred to fill the defect. He walked to our clinic for follow-up one year after surgery without any discharge.

Case 2: Mr A, was a 45 year old man who sustained gunshot injury to the mandible having been assaulted by armed robbers. This was in form of a compound fracture, with loss of most of the body of the bone. An osteomyelitis of the mandible ensued for which he had a debridement, and a platysma flap to cover a chin and lower lip defect. This however suffered a total necrosis and at a second stage, a pedicled pectoralis major osseo-musculo-cutaneous flap was used both to cover the residual defect and to

reconstruct the defect of the mandible.

Case 3: Mrs. G, aged 40+ presented to plastic surgery with a post traumatic discharging chronic osteomyelitis with a post traumatic discharging chronic osteomyelitis of the junction of the lower middle third of right tibia. She had the bone debrided under antibiotic cover leaving a gap of about six centimeters involving half of the circumference of the bone. A free latissimus dorsi muscle flap, covered with partial thickness skin graft was used to bridge the soft tissue gap. The subscapular vascular pedicle of the flap was anastomosed end to side to posterior tibial artery and saphenous vein on the right side respectively (artery to artery, and vein to vein). Postoperative period was uneventful.

Case 4: Mr. S, about 60 year old was referred to plastic surgery with a discharging chest wound and underlying osteomyelitis of sternum after cardiac surgery. The wound was debrided, and a pectoralis major turnover flap overlaid with partial thickness skin graft transferred to cover the sternal defect.

DISCUSSION

The pessimism that has existed concerning the cure of patients with non haematogenous chronic osteomyelitis has been based on the lack of complete bone and soft tissue debridement in the face of inability to completely cover the resultant wound with adequately perfused tissue. Lack of cure results in chronic discharging sinuses with need for frequent change of dressings, and possibility of development of malignant transformation in the ulcer. Painful discomfort, and disturbance of mobility may occur. Recurrent acute exacerbations predispose to development of septicaemia.

Previously, some cases were treated with radical debridement, followed by skin grafting after allowing granulation tissue to form over the saucerized bone. In the papineau technique(1), bone chips are packed to fill

significant bone defects before the formation of granulation tissue. Cross leg, cross arm, and various types of staged pedicled flaps were used in cases not suitable for skin grafting.

Regional and distant tissue transfer, allows freedom of debridement based on tissue viability rather than on amount of local tissue available to close the wound(2). It involves two stages viz, radical bone debridement, and musculocutaneous flap transfer. Since muscles generally are well vascularised they help in delivery of antibiotics to where they are required. As in this case report, soleus(3), as well as gastrocnemius muscle may be transferred to cover defects created after debridement of upper tibia and fibula. After debridement of skull bone, a large scalp rotation flap may suffice. A pectoralis major muscle flap(4), may be transferred for mandible(5) and sternum. As a transportation or as a turn over flap, it provides good bed for skin grafting.

When regional flaps prove inadequate for covering the defect, a distant flap should be employed. This should preferably be transferred as a free flap as opposed to a pedicled flap. The advantages of a free flap over pedicled flap are that it can be moved in a single stage, reducing morbidity and hospital stay, and there is more freedom of choice of donor sites(6). Free flap transfer involves elevating an area of required tissue (measured to fit the defect) along with the arterial supply and venous drainage. This unit when detached from its original situation, is then reconnected by microvascular anastomosis to known recipient vessels in the area of the defect.

In this series, case 3 had her disease and defect at a site least served by flaps. Here many muscles become tendons and muscle bulk available for reconstruction is small. An inferiorly based soleus muscle flap(7) would have been unreliable in view of the segmental blood supply and the plexus on which an inferiorly based flap is normally pedicled. A distant free flap therefore was considered the best option for her.

When required, that is, for bone defects less than six cm, cancellous bone grafting should be delayed for at least three weeks after soft tissue cover. A similar delay is advisable for bone gaps of greater than six cm., in which case vascularized bone(8) should be transferred. The donor site of such includes: fibula (based on peroneal artery), iliac crest (based on deep circumflex iliac artery), rib (based on intercostal artery), metatarsal (based on

dorsalis pedis artery), radius (based on radial artery), and scapula (based on circumflex scapula branch of subscapular artery). The rib used in reconstructing the second case, being part of a pedicled flap, was based on the blood supply of the pectoralis major muscle.

Finally, mention should be made of immediate or early, combined orthopaedic and plastic surgical management of cases with compound fractures that require reconstruction(9). This will prevent the development of chronic osteomyelitis and thereby help to reduce the strain on the health expenditure.

In conclusion, the cases presented demonstrate that flap repair enhances the management of chronic osteomyelitis. We recommend that more cases should be treated in that line.

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