

Bone and joint traumas in vascular malformations are a case of emergency: peculiarities in management

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Purpose: Fractures in vascular malformation patients are always a situation of exceptional urgency. Standard emergency centers are not familiar with such emergency procedures. There is the problem of severe hemorrhage and the challenge of conservative or surgical treatment.

Methods: A retrospective analysis of the clinical course of 10 cases and the long follow up results were studied. In 4 patients(2 femoral neck, 2 femoral) orthopedic surgery was performed. One patient with an extensive AVM and a fracture of the femoral neck declined the proposed orthopedic surgery. 5 additional patients with forearm fractures(2), lower limb fractures(2) and tibial plateau fracture(1) were treated conservatively.

Results: It is mandatory first to apply all techniques of conservative treatment. However such some fractures do not heal and have to be treated by surgery, as for a fracture of the femoral neck or a femoral fracture. As in vascular malformations there exists the risk of severe hemorrhage only a small incision should be performed(1). In addition a bleeding complication can appear opening up the bone. A good practice approach is the ESIN for femoral fractures and the traction screw for femoral neck fractures. The pathologic bones are only at the limb which is affected by the vascular malformation(2)20. There is a markedly prolonged bone healing process. Finally however the regular check up demonstrated normal sequences of movement. One patient with a fracture of the femoral neck declined treatment. One year after his accident he is therefore severely physically handicapped.

Discussion: Concerning the bone healing we found out that in spite of DIC-Syndrome a bone healing is possible. The potential of bone healing seems to be in the average range(3). It appears that delayed and very delayed union depends on various factors: the difficulty of internal bone fixation(bleeding, infection and the difficulty to apply the adequate implant). Non operative treatment is first choice. If internal fixation is mandatory the inferior results are depending on the difficulty to apply the adequate implant(bleeding, difficulty to expose the bone through the vascular malformation, abnormal bone configuration, reduced bone stability for a screw or a nail application with the consequence of insufficient internal fixation). These difficulties are the reason for the late union. Such the results of treatment are often unsatisfactory.

Conclusion: The orthopaedic/trauma surgeon and the vascular surgeon cooperatively have to rule out the optimal possible concept of treatment depending on the type and the location of each fracture individually adapted for each patient. There is no routine standard method of treatment. A less invasive fixation method should be used when possible. Interdisciplinary treatment is mandatory involvement of medical physicians well versed in the care of patients with vascular malformations is essential.

References:

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