EUROPEAN TISSUE REPAIR SOCIETY

CONCEPTS IN WOUND MANAGEMENT

MANAGEMENT OF WOUNDS IN MAJOR OPEN FRACTURES

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THE goal of management of an open fracture is to achieve primary bone union. The wound communicating with the fracture is the most significant factor which influences when and whether it happens. The wound influences the treatment protocol, the number of days of hospital stay, the time away from work and the cost of treatment. The fractured bone ends unite primarily only when the wound over the fracture site heals primarily. Though it appears to be a fact beyond doubt, quite often in the management of an individual patient this is forgotten leading to great morbidity.

Historically open fractures have had a bad reputation. Hippocrates had this to say on open fractures 'The physician should avoid the treatment of such patients if he has a reasonable excuse to do so, because the risk is enormous, success small'.[1] Two-thousand years after Hippocrates, Billroth declared in 1886, 'I can assure you that even after the most sophisticated operations succeed, my delight is nothing in comparison with the feelings I have after the successful management of an open fracture'. This amount of pessimism is understandable since at the time of Billroth, about 39% of the patients with open fractures of long bones died and another 30% ended in amputations. We do not know about the quality of life of the survivors.

The outcome changed for the better in the early half of the twentieth century with the introduction of antibiotics and skeletal fixation techniques. Mortality was reduced, but morbidity remained. The problems which thwarted success were infection and the capacity to cover large gaps in soft tissue. Advances in plastic surgical techniques and the advent of microsurgery gave the much-needed solutions and increased the rate of limb salvage.

DEBRIDEMENT – THE KEY TO SUCCESS

The significant step that led to increased success rate in limb salvage was the introduction of the concept of radical debridement of the wound before skeletal fixation. Conventionally debridement was done to remove the contaminants and remove what was obviously non viable. Doubtful tissues were left behind for the 'second look' operation that was carried 24 to 48 hours later. It was just this available option, which made surgeons conservative in their approach in removing tissues that were doubtfully viable or hypo vascular. Undoubtedly this approach frequently led to infection, delay in coverage of the wound and increased morbidity.[2] Furthermore, surgeons were reluctant to be radical in their approach to debridement since it made the defect larger and the available techniques of soft tissue coverage were found wanting.

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The advent of microsurgical free flaps changed the scenario. A flap like *latissimus dorsi* can cover even the whole length of the tibia. Large defects could be covered as easily as small ones and basically surgery involved the same effort. Micro surgeons started performing flaps to cover the wounds early and sometimes in emergency situations. In such instances there was no opportunity for the 'second look' operation and debridement was done in a radical fashion. The surgical philosophy shifted from 'removing what looked non-viable' to 'retaining only what was surely viable'. It was that shift in philosophy, which really reduced the infection rates and increased limb salvage.

Care of the wound in the already compromised individual like an uncontrolled diabetic or hypertensive or a person with heart disease improved. These individuals needed early debridement, since they tolerated complications like haemorrhage or infection much worse than a normal individual. Wounds in medically compromised persons have to be debrided as early as a normal individual. Delay not only increases morbidity, but also in some