

CASE REPORT

Medium-Term Outcome after Multidisciplinary Management in Polytrauma Patient: a Case Report

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SUMMARY

Previously healthy young patients having survived after multiple severe musculoskeletal injuries and undergone trauma-related amputation of lower limb have a long life expectancy. This case shows the role of multidisciplinary approach in severely injured polytrauma patient managed by traumatologists-orthopaedists, anesthetists-resuscitators, radiologists, general surgeons, microsurgeons, thoracic surgeons, urologists, neurologists, physical therapy rehabilitators, physiotherapists, technical orthopaedists, prosthetists. Majeed score demonstrates ability to perform work and to walk. Amputation affects the quality of life with a certain negative somatic and functional impact. Microprocessor controlled knee joint in patients after transfemoral amputation allows more precise adjustment of knee resistance, providing an increased walking velocity, reduction in stumble and falls, however the final outcome depends also on patients' own motivation and readiness to regain previous quality of life.

Key words: polytrauma, Majeed score, transfemoral amputation, microprocessor controlled knee joint

AIM OF THE DEMONSTRATION

The aim of this article is to emphasize the significance of multidisciplinary management in severely injured polytrauma patient showing the medium-term outcome.

CASE REPORT

30 years old female was referred from regional hospital to Riga Eastern Clinical University Hospital, Clinics „Gailezers” because of high energy polytrauma with multiple injuries (New Injury Severity Score value was 41). CT and X-ray revealed pelvic fractures of C3 type (Figure 1, 2) (6), open fractures of left and right crural bones (Figure 3, 4a, 4b), compression fracture of Th12 without dislocation, right sided fractures of II, VII, IX, X, XI ribs, right sided hemopneumothorax and left sided pneumothorax, cerebral commotion, contusion of liver. Digital subtraction angiography determined the defect of contrast in *a. poplitea dxt.* 2 cm in length, as well as *truncus tibioperonealis* proximal part thrombosis.

Osteosynthesis of left crural bones with Ilizarov apparatus, right crural bones with monolateral Hoffmann external fixation system and pelvis with external fixation apparatus were urgently performed at a regional hospital. Resection of *a. poplitea dxt.* injured segment with the subsequent creation of end-to-end anastomosis were carried out urgently as soon as the patient was transported to Riga Eastern Clinical University Hospital, Clinics „Gailezers”.

Thrombosis of *a. poplitea dxt.* anastomosis was revealed during repeated angiography the next day. Patient's right foot was cold, cyanotic, without any sensation and movement ability of fingers. Therefore thrombectomy, *a. poplitea dxt.* segment resection were carried out with following vascular reconstruction using *v. saphena magna*

dxt. (VSM *dxt.*). In spite of previous tactics the gangrene of the right foot was progressing. In view of the absence of mainstream blood perfusion, extended wound at the hollow of the knee, *m. soleus dxt.* and *m. gastrocnemius dxt.* ischemic injury in the result of compartment syndrome the treatment of choice was transfemoral amputation at the middle third level of thigh.

Pelvis was fixed with locking plate at posterior access and acetabular component – with cannulated screw at anterior access. The osteosynthesis of left crural bones was performed with locking plate.

Patient was discharged in stable condition for further rehabilitation course.

Patient fatigue strength and mobility were improved within 3 weeks of rehabilitation course. The transfemoral prosthesis with microprocessor knee component was made in accordance with the patient's physical state.

The Majeed score demonstrates patients' satisfaction of treatment outcome as well as their ability to perform work and to walk (5, 10). Functional assessment of this patient was performed based on seven criteria: pain, work, sitting, sexual intercourse, walking aids, unaided gait and walking distance according to the Majeed score for grading the outcome of pelvic fractures (5, 10). According to the total Majeed score of this patient that was 80 following 12 months after severe polytrauma, medium-term outcome is graded as a good.

DISCUSSION

Multiple injuries require timely and often multispecialty care and may be associated with greater severity and mortality than single injury (1). Pelvic fracture can be associated with significant pelvic hemorrhage, and the mortality of patients with pelvic fracture remains high

(4). Type III open fractures of crural bones with ischemic period in tissues of more than 6 hours contributes to a poor result of limb salvage (9). In spite of several attempts, it was impossible to preserve right lower limb in this case. Self-care of amputee persons contributes to improve functional status, depressive syndrome, and also health-related quality of life (8). Demonstrated patient was a healthy person, engaged in sports activities and has been working a job demanding good physical endurance before severe polytrauma. A specific subgroup of individuals with amputation is the group of nonelderly persons having an amputation for reasons other than vascular disease - due to trauma. Those who survive the trauma have a long life expectancy (2). Everyday activities of demonstrated patient corresponds to the high mobility group. Microprocessor controls of prosthetic knee joint allow more precise adjustment of knee resistance and provide the patient to walk in more demanding situations such as descending stairs, step over step or traversing a hillside (3). Increased walking velocity, reduction in stumble and falls were demonstrated using microprocessor knee joint (7). The goal of the definitive care in polytrauma patients is to achieve a good functional outcome, which allows patients to return to previous activities (10), however the final result depends also on their own motivation and readiness to regain previous quality of life. This case shows that in case of severe multiple injuries multidisciplinary management, including primary and definitive treatment, early rehabilitation, prosthetic possibilities and polytrauma patient's active participation in the treatment and rehabilitation process in accordance with the patients' mobility group play significant role in outcome of patient having survived severe multiple injuries and undergone lower limb amputation. Further follow-up of the patient is required to evaluate a long-term outcome after the applied treatment and lengthier acclimation period of microprocessor controlled prosthetic knee utilization. Long-term follow-up with regulative treatment is very significant to improve the quality of life after severe polytrauma.



Fig. 1. Pelvic X-ray after injury: left sided fracture of the acetabulum (type A3) and bilateral comminuted fracture of the sacrum



Fig. 2. Pelvic X-ray after oss sacrum osteosynthesis with locking plate at posterior access and acetabular component – with cannulated screw at anterior access



Fig. 3. X-ray: an open type IIIA fracture of the left crural bones and open IIIC fracture of the right crural bones

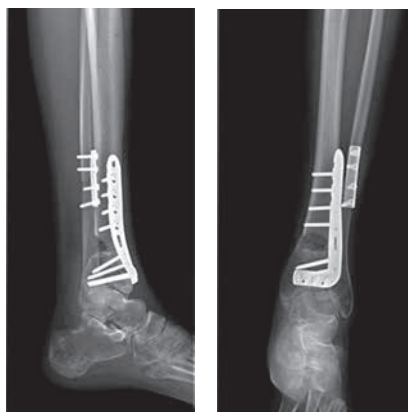


Fig. 4a, 4b X-ray of left leg 5 months after internal osteosynthesis

Conflict of interest: None

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