



EXTERNAL PELVIC OSTEOSYNTHESIS, RETROSPECTIVE CLINICAL STUDY OF 100 CASES

Traumatology

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ABSTRACT

Pelvic fractures are severe lesions and often are associated with multiple skeletal injuries. The related literature on the general principles of treatment has a very poor number of examples. Our goal was to study the results of external fixation in patients with instable pelvic fractures at superior level trauma center in the Republic of Moldova. We used data from the information system of the Chisinau Institute of Emergency Medicine to calculate the patient's data, the causes of trauma, the duration of the surgical treatment, the duration of hospitalization, the rate of complications, the types of external fixation and difficulties in treatment. All patients over 18 years of age were included in the study. Patient demographics, mechanism of injury, and complications were recorded retrospectively.

KEYWORDS

pelvis, lesions, external fixation.

INTRODUCTION

In the late 1970s and early 1980s, unstable pelvic ring injuries were predominantly fixed using external skeletal fixation [1]. Various devices were used to stabilize even complex fracture situations. The biomechanical efficiency of these constructs could be confirmed in several analyzes [2]. The external fixation is the most commonly recommended treatment concept for surgical stabilization of the pelvic ring in emergency situations [3]. The biomechanical data indicating insufficient stability while weight bearing for some configurations of external fixation, in emergency situations mechanical stability is the primary treatment aim [4].

MATERIALS AND METHODS

100 patients (clinical cases) who underwent surgery or who were operated in other medical institutions and were transferred to the Institute of Emergency Medicine - tertiary level medical center in the Republic of Moldova with external pelvic osteosynthesis or pelvic-femoral osteosynthesis for fracture of the acetabulum were examined retrospectively.

The study covered the period between 01.01.2019 – 31.12.2024. The Republic of Moldova – a country with a population of 2,4 million inhabitants.

The data were collected from the information system: <http://hipocrate.urgenta.md/>.

The diagnoses coded according to CID10 were used in the search engine, which include: polytrauma, pelvic ring fractures, acetabulum fracture.

The procedures coded according to CID 10 were used in the search engine, which include: External fixation of pelvic fracture, Removal of external fixation device, Application of external fixation device not classified elsewhere.

RESULTS

The hospitalization of the 100 patients was distributed in 10 wards from 3 different medical departments.

The distribution by gender was: Women – 37, Men – 63, the male gender predominating.

The average age was 44.6 years - the working age, the youngest patient was 19 years old and the oldest was 82 years old.

Distribution by location: Chisinau (the country's capital) – 37 patients, and the remaining 73 patients were from 20 other cities, so within the Institute of Emergency Medicine, patients from the entire Republic with unstable pelvic fractures received specialized medical help.

Examining the occupational and professional status before the trauma, was found very diverse, such as: students, employees - workers, retirees, people with different degrees of disability including 3 patients

suffering from schizophrenia, personal assistants, teaching staff, as well as employees of law enforcement agencies - 7 patients (policemen and officers - all suffering in road accidents).

Causes Of Trauma:

Almost 1/3 of the patients suffered height fall injuries - 33 in number. The average height of fall being 3 meters. We mention that 1 patient suffered catraumatism from the 9th floor - remaining alive, and the highest height being from the 13th floor resulted in death in the first 24 hours after the trauma. Crushes or compressions were the causes of 8 traumas (tree, car, wall, sand bank). Road accidents significantly prevail in this statistic with a total of 59 cases (pedestrians – 21, drivers – 11, passengers – 12, motorcyclists – 12, scooter drivers– 1, cart drivers – 1, cyclist – 1). Thus, according to statistical data, pedestrians were the first among those who were invoked in car accidents, followed by car occupants (passengers and/or drivers), practically equally with motorcyclists.

Classifying pelvic injuries according to the type of instability according to the AO / Tile classification: 65 patients suffered horizontally unstable and vertically stable fractures - Tile type B, 26 patients had both vertically and horizontally unstable injuries Tile type C, 5 patients were diagnosed with acetabulum fractures type B, 1 external pelvic-femoral osteosynthesis was applied strictly for the acetabulum fracture, and 3 patients had opened fractures (type B or C AO/Tile) and they were classified using the Faringer classification.

The methods of external pelvic osteosynthesis used for the patients included in the study were: 43% - through iliac wings, 19% - supraacetabular, 25% - through iliac wings + supraacetabular, 3% - external + internal, 1% - C-Clamp.

Distribution Of External Pelvic Osteosyntheses By Medical Institutions:

93 patients - Institute of Emergency Medicine; 7 – applied by the doctors of the Institute of Emergency Medicine in other medical institutions; 1 – by the district doctor.

73 operated patients were polytraumatized. Of those polytraumatized, 5 treated in the urology department had an average length of hospitalization of 66 days (between 14 and 209 days). They required the placement of a cystostomy - in 3 cases secondary to the bladder injury and 1 secondary to the urethral injury.

The mean preoperative time since trauma was calculated to be approximately 2.7 days. Being 0-1 days for urgently admitted patients and 12 days on average for patients transferred from other medical institutions. External pelvic osteosynthesis applied after the longest post-trauma period was after 45 days as well as 66 days.

The average number of operating surgeons was 2, the minimum number being 1, and the maximum number being 5.

The average operating time was calculated as 55 minutes, minimum 20 minutes, maximum 180 minutes.

The average duration of postoperative hospitalization in the Intensive Care department was calculated at 8.8, with a maximum of 135 days.

The average total length of hospital stay was calculated at 20.08 days, with a minimum of less than 24 hours and a maximum of 209 days.

There were registered 12 death cases in the study group, minimum less than 24 hours after hospitalization, maximum 47 days after hospitalization, with an average of 17 days post-trauma. One death was registered 5 days after the conversion of external osteosynthesis to internal osteosynthesis – the patient having polytrauma, comorbidities and being later diagnosed with COVID-19. There were no registered deadly outcome of patients with external pelvic osteosynthesis in other departments than in the Intensive Care department. 7 patients required one or more reassembly.

The average duration of external osteosynthesis from 100 patients was 34.4 days, 85 patients were followed, with a minimum of less than 1 day, and maximum of 100 and 135 days.

Other complications mentioned in the medical records besides the fractures of the bones of the skeleton were: traumatic shock and hemorrhagic shock, SEPSIS, kidney failure, limb thrombosis, mesenteric thrombosis, stasis pneumonia, bedsores, cystitis after urinary catheterization.

Complications mentioned in the result of external osteosynthesis: All conscious patients mentioned local discomfort from the first postoperative day. Skin infection around the pins and instability of the external pelvic fixation were 2 other frequent changes mentioned in all the medical records of the patients who were hospitalized without conversion of external fixation to internal fixation with a duration longer than 14 days, and in the primary examination of all patients who were repeatedly hospitalized for the removal of the pelvic external osteosynthesis device.

Report: year – external osteosynthesis – conversions.

Table – 1

Years	External osteosynthesys	Conversion to internal osteosynthesis
2019	20	1
2020	12	1
2021	16	3
2022	1	15
2023	17	8
2024	16	8

The main difficulties found in the conversion performing were identified: lack of available operating room (COVID or repair works in the operating room, the lack of conditions in the operating room, especially Radiography device, different distribution of patients in the institution - 10 different departments with specific specialization, own point of view of some orthopedics-traumatology colleagues that external osteosynthesis is superior to internal osteosynthesis.

CONCLUSIONS

All types of external osteosynthesis allowed stabilization of the pelvic injury. All patients presented local discomfort.

The division of patients into 10 departments with different specializations, compacted into 3 branches create difficulties in providing and supervising the patient with external pelvic osteosynthesis for general practitioners, collaborators of specialized departments as well as specialists in the treatment of these types of pathologies. The middle and lower medical staff of each department has a different level of knowledge of the specifics of medical care for patients with external pelvic fixation, and these may arise in the process of providing specialized medical help.

Patients with septic complications – had the longest average length of hospital stay for the patient.

The Associated Trauma department recorded the highest number of deaths.

Although 37 patients were from Chisinau and 63 from different districts of the country, out of the 100 patients in the study, only 1

patient was stabilized externally by the doctor from the other district.

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