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NURSING PACIENTS WITH OPEN FRACTURES

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Abstract: *The future of open fractures is "played" in the first six hours, so they must be considered "emergencies of traumas". Special nursing care in open fractures should be applied according to the patient's general status, local state of the traumatized limb and the type of bracing used before surgery. Special nursing goals are the rehabilitation of joint mobility and muscle strength and recommendations for certain interdictions, designed to educate posture, static and gait, in safe conditions and performances as close to normal as possible.*

Key words: *nursing, open fractures, caring management.*

1. Introduction

Nursing the patients with traumatic lesions have a special place in medicine and was born in the same time.

Seeking remedies for relieving sufferance and healing wounds of primitive people represented the birth act of "primitive medicine" developed then through accumulation and transmission of medical knowledge.

In the Luxor area (Egypt) archeologists found splints that immobilized fractured limbs of some skeletons 4500 years ago.

The Code of Hamurabi (about 2000 BC) called for penalties applied to doctors treated fractures incorrectly and disabling free people. In the fourth century BC Hippocrates wrote "de fracturis", a guide helping his disciples in fractures' treatment.

The great surgeon Ambroise Paré (France, 16th century), dominated the dark Middle Ages. He is the father of modern surgery and his principles of treating traumatic wounds in general and broken bones particularly, are still accepted and applied today. In that period an open fracture meant death in the majority of open fractures: "where the bone comes out death gets in". Ambroise Paré had an open fracture of the leg and he treated himself successfully (1575), following his principles (cleaning, cutting of death tissue and small pieces of bones, reducing bleeding, optimal position, drainage and a bandage with flavored alcohol).

It is essential to remember the concept of the first bandage because of his precocity and quality depends in large part the further evolution of an open fracture.

In our days is no longer enough saving the patient or saving just a limb but to recover the full function of the traumatized limb.

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Definition

An open fracture is a communication of the outbreak of fracture with the outside through a wound of skin. Opening the outbreak of fracture can be either external (mechanical factor breaks or cuts the skin, muscles, fascias and establishes a communication of the outbreak with the outside), or from the inside through a sharp bone fragment.

2. Treatment - General Management

The future of open fractures is "played" in the first six hours, so they must be considered "emergencies of traumas".

The treatment has a double goal:

1. Strengthen the bone
2. Healing soft tissues injuries as early as possible and definitive treating of skin lesions and bones.

The objective of the open fractures' treatment is to prevent complications, the most important is focal and epifocal infection.

Remarkable progress is due to primary osteosynthesis, antibiotics and particularly to strictly obeying of some basic principles:

1. Temporary restraining without unexpected exploration of fracture at the place of accident
2. Emergency transportation of the injured in a hospital with a reliable comfort and a complex and very well trained medical team.
3. Transforming the open fracture into a closed fracture by turning the contaminated wound into a clean surgical wound;
4. Immediate or secondary covering of skin defects;
5. Strict restraint of the outbreak of fracture from the reduction moment until consolidation;
6. Early rehabilitation through active and passive movements in all joints.

3. Nursing Particularities

Special nursing care should be applied according to the patient's general status, local state of the traumatized limb and the type of bracing used before surgery.

Special nursing goals are the rehabilitation of joint mobility and muscle strength and recommendations for certain interdictions, designed to educate posture, static and gait, in safe conditions and performances as close to normal as possible.

3.1. Patients Immobilized in Plaster Device

1. Periodic evaluation of distal segments' status (from the affected lower limb fingers, not covered by the plaster device) and watching the correct active movements at this level.
2. Patient education to perform regular active movements in all free joints , in the aim to maintain in normal limits the tonus, volume and strength of the muscles, to maintain the active joint mobility at the normal range and to prevent outbreaks of thrombosis.
3. Regular observation of skin color around the plaster device; a pale appearance (ischemia) or cyanosis (stasis) must be immediately reported to a medical specialist because it may be a sign of a quick setting of a post-traumatic edema and could convert a plaster device into a real "tourniquet". If under the plaster device is a traumatic or a surgical wound the color of the plaster device must me monitories and a "window" cut has to be performed to facilitate regular access to the wound.
4. Periodic monitoring of pain; heel pain can the effect of the long flat lying

down in dorsal position and this is the reason why the nurse helps the patient to change position on flat lie on ventral side or on lateral.
5. Immediate referral to an orthopedic and trauma specialist if the patient accuses tingling, numbness, tightness or pressure in the limb, as these symptoms may suggest the worsening of posttraumatic edema, or the onset of the compartment syndrome or the external compression of the sciatic nerve between superior-external edge of the plaster device and fibula head.
6. Emergency referral to an orthopedic and trauma specialist if the plaster device is emanated any odor, as fetid odor indicates the presence of necrosis lesion or the development of a skin infection under the plaster.
7. Patient education regarding the need to follow the medical team's indications, asking for a constant partnership with the patient.
8. The implementation of measures to fight against the effects of immobilization in bed, patient education on: the use of auxiliary tools for changing position in bed, checking the correct understanding of prescribed recommendations, the need to use walking devices (frame, crutches, cane) in the aim to protect traumatized leg during consolidation, the way of walking and moving without any prejudice on the healing process, the need to respect the bed resting and medical indications, exercises during rehabilitation period.

3.2. Patients Immobilized in Continuous Extension

The process follows some important steps:
1. Installing the immobilized patient in a bed far away from the door (preferably the window), where the extension device is safe from any "injury".
2. Frequent checking of the traction device: wires must pass through the middle winch reels, weights to hang freely and measured properly, and the bars of the bed not to interfere with the device.
3. Closure of distal extremity of the bed (in the legs area) in high position and realize an "extension" with the patient's body weight.
4. Positioning the patient properly dorsal flat lie and explaining that weights can move him distal, in which case he should return to its original position using the auxiliary devices of the bed.
5. Encouraging the mobilization from dorsal flat lie position to sitting position and vice versa, as this mobilization prevents pulmonary complications.
6. Explaining the allowed movements and their amplitude, prevent installing muscular hypotrophy, fixed joints and occurrence of thrombosis.
7. The patient should not lie flat in the side position, because it generates a torque movement harmful to the outbreak of fracture.
8. Checking the position of the affected limb on traction and changing the harmful position by placing a pillow or a blanket: the optimal position is with the knee in slight flexion and the axis of limb tangent to the first interdigital space.
9. Regular monitoring of skin condition (color, temperature) and addressing the specialist doctor if any pathological signs.
10. Applying all measures to prevent immobilization complications or nosocomial infections.
11. Placing all needed objects in very close proximity of the patient, helping the patient to satisfy his basic needs and remove all the obstacles.

12. Psychiatric support of the patient, explaining the necessity of long time continuous traction in the aim of good healing of fracture, encouraging and removing the helpless filing.

References

1. Baltă, G.A. *Tehnici generale de îngrijire a bolnavilor*. Bucureşti: Editura Didactică şi Pedagogică, 1988.
2. Gorun, N. and Troianescu, O. *Fractura deschisă*. Bucureşti: Editura Medicală, 1979.
3. Pop, Al. *Fractura deschisă de tibie*. Arad: "Vasile Goldiş" University Press, 1999.
4. Şamotă, I. *Noţiuni fundamentale de ortopedie şi traumatologie*. Braşov: Reprografia Universităţii Transilvania, 1996.
5. Şamotă, I. and Necula, R. *Elemente de ortopedie şi traumatologie*. Braşov: Editura C2 design, 2003.
6. Voiculescu, M. *Medicina pentru familie*. Bucureşti: Editura Medicală, 1986.