Pressure Ulcers After Epidural Anaesthesia

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Introduction

Control of pain with epidural anaesthesia represents a major advance in the care of delivery and it is a part of standard gynecologic surgery. Side effects of this procedure are motor block, hypotension, rarely lower limb paralysis, hypothermia, and vertebral canal haematomas. Modern epidural techniques aim to give maximal sensory block with minimal motor blockade. Furthermore fetal monitoring, intravenous infusions can reduce the mobility.

Most pressure ulcers occur in older, debilitated, incontinent, bedridden patient, however epidural anaesthesia is associated with a low risk of pressure ulcers in young and mobile patients. The combination of pressure, share and friction causes a pressure ulcer development [1, 2].

Current management in obstetrics and gynecology encourages women to be mobile and the absence of pain reduces the patient movements. The patients should be alert to the potential problem of epidural analgesia and pressure ulcer prevention is a basic nursing practice [3].

Epidemiology

A literature search identified a few articles by different authors about pressure ulcers in women with gynecological disorders and in pregnant women.

Shah examined three normal weight young patients (average age 40 years) with early stages of cervix and vulvar cancer. The patients were supine for about 120 min and 20 mL of 0.25% bupivacaine was used for pain relief. These patients developed ulcers

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in 1 to 3 weeks. The ulcers healed in about 4 months. The patients didn't have any ulcers predisposition and the development of wounds was related to the lack of continuous monitoring, to the lack of adequate equipment and to anaesthesia motor block [4].

Alfirevich A et al. examined a case of pregnant overweight 28 years old woman. A total of 10 mL of 0.125% bupivacaine with fentanyl and epinephrine was used during the childbirth. After the increase in concentration to 0.25% bupivacaine, the patient remained motionless and approximately 20–24 h afterwards developed a blister on left heel and on the sacrum. Heel blister enlarged and became painful. The patient was discharged with continuous care of the heel lesion. At follow-up, the patient's heel ulcer decreased in size and there were no areas of necrotic tissue. The prolonged position during the delivery and the overweight contributed to the development of the pressure ulcer [5].

Naruse S et al. examined a case of normal weight 34 years old patient. Epidural anaesthesia occured for severe and persistent contraction. The patient was supine for 20 h. At child birth, a pressure ulcer was present in the intertrochanteric part of the right femur. Insufficient knowledge of medical staff about the risk of pressure ulcer during epidural anaesthesia caused the development of the ulcers [6].

Takahashi E et al. investigated two normal weight young patients (average age 32 years), with a uterine leiomyoma. These patients were supine during the surgery for about 70 min. 0.2% ropivacaine at the rate of 4 mL/h was used for epidural anesthesia. In second case the epidural anaesthesia was extended for 12 h after surgery. The pressure ulcer developed during the first day after surgery and it was characterized by erythema, induration, and persistent local pain. Also in these cases the pressure ulcers were not related to age, physical status, surgical procedure, type of disease, surgical position or nursing care, but to effect of prolonged epidural anaesthesia [7]. According to published evidence the incidence of pressure ulceration during gynecologic surgery appears low but lack a specific incidence monitoring in maternity units. Ulcers may heal during the surgery follow up and often the injuries are unreported (Figs. 11.1 and 11.2).

Pathophysiology and Clinical Features

Prolonged pressure, friction and shear are known cause of the development of pressure ulcers. Pressure is inversely proportional to the area and it is highest next to the bone like spines, coccyx, hips, heels, and elbows. A constant pressure for more than 2 h produces tissue ischaemia, occlusion of the vascular network in underlying tissues and irreversible tissue damage. Shear is caused by lateral or rotational forces which occur frequently in deep tissues. Friction and share are increased by inadequate incontinence pads, mattress and other devices. Furthermore the amniotic fluid, blood and incontinence when in contact with the skin for prolonged time can alterate the skin homeostasis. The patients risk factors include age, weight, continence, malnutrition, hypoproteinemia, skin hydration, anemia, infection, congenital hip abnormalities, gestational proteinuric hypertension and more. This combination may cause damage in a few minutes in some cases and all these risk factors are worsened in the presence of reduced sensory perception [8, 9].

Fig. 11.1 Stage 1 pressure lesion 24 h after delivery with epidural anaesthesia

Clinical aspects of pressure ulcers are now classified according to the European Pressure Ulcer Advisory Panel (EPUAP) staging system [10].

Differential diagnosis of early stage pressure ulcers includes contact dermatitis and burns from heating pads.

Risk Assessment

Managing risk is a fundamental part of clinical practice and preventive measures are required in epidural anaesthesia.

It is important to avoid analgesia with motor and profound sensory block, and any motor block should be reduced to the immediate postsurgery. The goal is to reduce the concentration of local anesthetic needed to obtain analgesia without motor blockade, avoid exposure to the cause of the injury and cover and protect the area. During the first night after the operation, the analgesic treatment should be changed to systemic treatment like morphine and in cases of prolonged motor block, patients should be treated as paraplegic. Frequency of repositioning should be increased.

It is essential to proceed to a clinical evaluation of the level of mobility and the state of skin integrity. This inspection should be carried out at the patient's

Fig. 11.2 Stage 2 pressure lesion 12 h after delivery with epidural anaesthesia

hospitalisation (within 8 h) and should be continued daily to identify the presence of erythema, temperature and any other features of the skin [11, 12].

Sometimes lesions may appear even a few days after surgery, so a re-evaluation should be made at the time of the discharge from the hospital.

One of the first preventive strategies is to ensure a continuous change of position of patients at risk. All those aspect must be done by ensuring the patient's comfort, hygiene, and the preservation of functional ability.

The frequency of repositioning should be made by considering the tissue tolerance, level of activity and mobility, clinical and skin features.

Repositioning must be made regularly until the total motor function and sensibility return is completed.

The nursing/obstetric trained staff should also educate patients, identified as at risk, in adopting behaviors and positions that should prevent their onset.

A Wound Care Team should also be involved, in order to identify, in collaboration with the nurse/obstetrician, the right procedures of monitoring, evaluating, preventing and treating.

Standard prevention of pressure ulcers consists of changing position every 2 h, good patient care, which is often provided by family members and hospital staff [12, 13].

In identifying the population at risk of developing pressure injuries, it is essential to use a risk assessment scale when a patient is admitted to hospital [14]. At the end

of the surgery and during the time of hospitalization, a periodic risk re-evaluation should be carried out or in any case of significant changes in clinical conditions. These assessments allow the staff to monitor and develop a detailed and personalized risk prevention plan. It is essential also to check the effectiveness, the quality and the safety of the delivery and surgery equipment.

Mattress covers are often robust to prevent contamination of the foam core and to control the amount of body fluid, however robust foams produces areas of high pressure.

Then the quality of the mattress, the cover integrity and absorbent pads are of great importance for pressure redistribution, women should wear heel pads and be repositioned regularly [15].

Wound Bed Preparation and Advanced Dressings

Treatment of pressure ulcers requires a targeted and comprehensive approach that will provide adequate wound bed preparation that aims at natural healing and tends to get the most benefits from the currently available advanced products.

The TIME acronym was introduced as a method to identify the elements to improve and to control the wound tissue, the infection or inflammation, the moisture balance and the epithelial advancement [16].

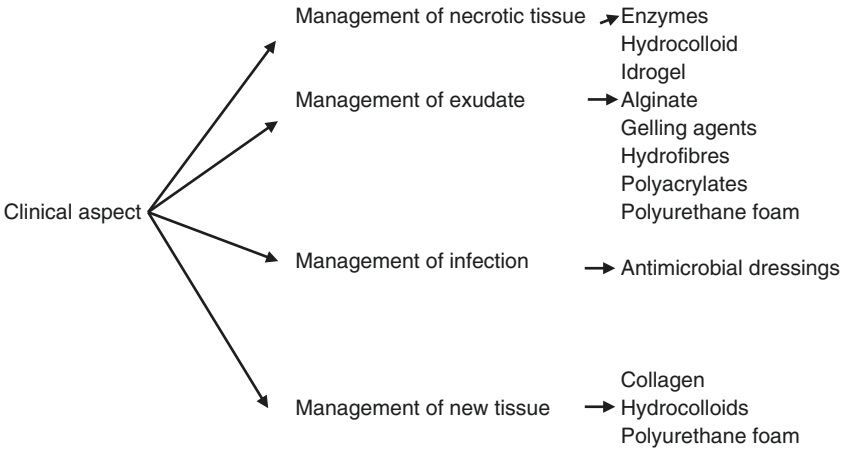
Wound bed preparation is a prerequisite for every technique and every therapeutic approach and is a model that allows the clinical staff to analyze the factors that contribute to healing wounds [17].

To choice of the right dressing should be considered according to the characteristics of the wound.

This evaluation results in the choice of the most suitable dressing (Table 11.1).

Careful cleansing of the wound bed must be performed at each dressing change, and must be followed by a new wound assessment. Before applying a dressing,

Table 11.1 Wound dressing selection according to healing phases



always consider some aspects such as microclimate, ease of application and removal, skin evaluation, dressing size and comformability. Advanced dressings can be used for preventive and treatment purposes. If dressing is used for prevention, it will be necessary to continue with the preventive techniques previously described.

In treating the wound bed, especially in highly exudative lesions, evaluate and protect the periwound skin with barrier products [18].

Conclusion

Epidural anaesthesia and technological developments have important health benefits but, they have resulted in reduced mobility and in an increase of the potential for pressure ulcers development in healthy women. Managing risk is a fundamental part of clinical practice and it is essential that equipment used is appropriate to the situation. A prolonged anaesthetic effect for postoperative pain relief, can be a primary risk factor.

Developing a training and educational program specifically targeting the problems is relevant for all the female patients and hospital multidisciplinary team. It is mandatory to early identify the specific risk factors and continuously perform the risk assessment.

It is essential that all women are assessed for risk of pressure damage; this should be included as part of their care plan. Women must be informed of the risks and encouraged to participate in their own care. It should be recognised that epidural anaesthesia may create a risk of pressure damage.

In conclusion there is a real need for all hospital teams to implement guidelines on prevention, surveillance and to monitor activities during the delivery and during the standard gynecological surgical procedures.

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