

CASE REPORT



## A neonate with a facial congenital pressure injury: a case report

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### ABSTRACT

This is the first case report of a facial congenital pressure injury in a full-term neonate, due to pressure on the neonate's head between a large leiomyoma and the mother's pelvic bone.

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Pressure injury; congenital; neonate; facial congenital injury

### Introduction

Congenital pressure injuries are not well described in the literature. It is believed that these lesions are not well-recognized in the neonatal intensive care unit [1].

A pressure injury is a localized injury to the skin and may involve the underlying tissue such as the subcutaneous fatty tissue or muscle tissue [2]. Pressure injuries are usually located over bony prominences and occur due to prolonged pressure, at times in combination with shear. Animal studies have shown that a continuous pressure of 70 mmHg for two hours results in ischemic changes in the skin [2,3].

Pressure injuries are categorized by severity similar to the conventional pressure ulcer classifications [2]. The first category is defined as non-blanchable erythema. When partial thickness or full thickness skin loss is seen, it can be placed in the second and third category respectively. In the fourth and most severe category full thickness tissue loss, with exposed bone, tendon or muscle, is seen. Treatment of the pressure injuries is a combination of avoidance of pressure and local treatment of the defect [2].

Congenital pressure injuries develop in utero and Johnson proposed that this can be provoked by severely diminished or absent amniotic fluid volumes. It is hypothesized that due the low levels of amniotic fluid the cushioning is lost and the child is not

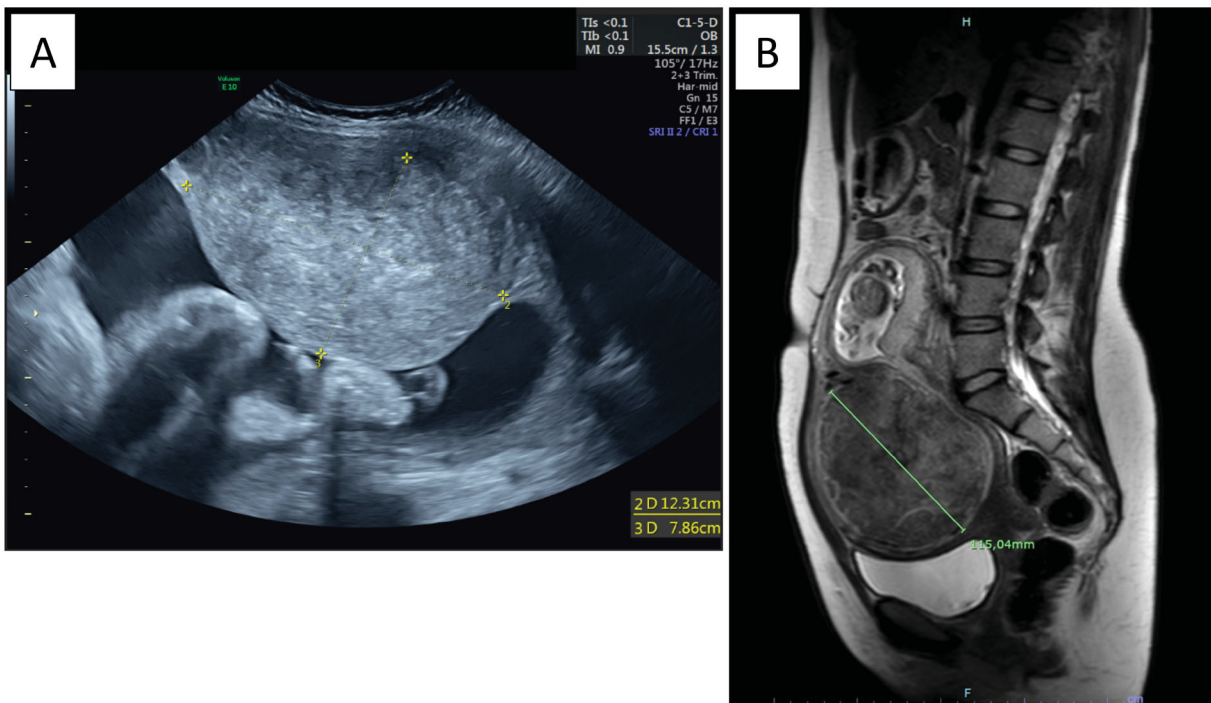
protected from the pressure of the maternal musculo-skeletal protrusions [1].

Compared to adult skin, infant skin is approximately 50% thinner including all skin layers (dermis, epidermis, subcutaneous fat). The stratum corneum is primarily responsible for barrier function and is functionally developed at approximately 32–34 weeks of gestation. When the stratum corneum thickens this results in less transparent skin. Infant skin is unable to provide the same range of protection compared to adult skin [4].

Petrolatum ointment, or Vaseline, is known to improve barrier function in adults by penetrating into the intercellular spaces of the stratum corneum to one cell layer above the stratum granulosum [4]. Furthermore, Vaseline is shown to improve skin condition and electrolyte balance in newborns [5,6]. However, there are studies that show controversial effects of petrolatum-based ointments and creams, i.e. increasing the risk of nosocomial infections in preterm infants [7–10].

### Case report

A forty-one-year-old female (gravida 2, para 1), with a history of uterine fibroids or leiomyomas, presented herself at 38 weeks of gestation, in spontaneous labor



**Figure 1.** Ultrasound and magnetic resonance imaging (MRI). (A) ultrasound at 10 weeks of gestation. The outer edges of the leiomyoma are marked by yellow crosses. (B) MRI at 15 weeks of gestation. The leiomyoma's width is marked by the green line.

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The pregnancy was uncomplicated and without oligohydramnios. A caudally positioned intramural leiomyoma of 10 by 12 cm was diagnosed at a 10 weeks ultrasound (Figure 1(A)). At 15 weeks of gestation an MRI was made to measure up and clarify the position of the leiomyoma (Figure 1(B)). At the start of labor, the antenatal position of the child was in head position. Due to non-progressive dilation with 27 h of ruptured membranes, a caesarean section was performed. The neonate weighed 2,690 g with a head circumference of 33.5 cm. A mucus plug was removed, after which the child started breathing. Apgar scores were 8 at 1 min and 10 at 5 min. No dysmorphias were observed.

Remarkably, the child had an erosive pressure defect on the left side of the face surrounded by a hematoma. At the zygomatic bone, a skin laceration with an indentation of approximately 1 cm with a central pale area was observed (Figure 2(A)). The consulted plastic surgeon advised to treat the injury topically with regular Vaseline ointment. Two days later a dramatic improvement of skin color and turgor was observed while the ulcer remained stable showing signs of healing (Figure 2(B)). After 3 weeks, progressive healing of the remarkably smaller ulcer was observed (Figure 2(C)) and after 2 months, the lesion

was completely healed with a still visible but stable scar (Figure 2(D)).

## Discussion

Congenital pressure injuries are rare and not extensively described in the literature. According to the few cases described, it was suggested that non-iatrogenic pressure injuries are more often observed in neonates born to mothers with severely decreased or absent amniotic fluid volumes [1].

In the case illustrated, the mother had normal amniotic fluid levels during her pregnancy. Her membranes were ruptured for 27 h, which eventually results in a lower level of amniotic fluid. This time period was negligible compared to the study of Johnson et al. whereby the described cases of congenital pressure injuries occurred to neonates when the mother had ruptured membranes for at least 8 days prior to delivery [1]. The remarkable part of this pregnancy was the presence of a caudally located leiomyoma of 10 by 12 cm (Figure 1), that possibly could have given pressure to the fetus' head against the pelvic bone during the dilation part of parturition.

By definition pressure injuries are not considered to be medical adhesive-related skin injuries, abrasions, bruises or burns [1]. A traumatic or iatrogenic birth injury is defined as 'structural destruction or functional



**Figure 2.** The healing progress of the congenital pressure injury. (A) Directly postpartum. (B) Two days postpartum. (C) Three weeks postpartum. (D) Two months postpartum.

deterioration of the neonate's body due to a traumatic event at birth' [11]. In this case, the caesarean section was performed without complications and therefore the pressure injury can be classified as non-iatrogenic.

In the differential diagnosis for non-iatrogenic pressure injuries one must rule out aplasia cutis congenita (ACC). ACC is a rare congenital skin defect with an incidence of approximately 1–3 out of 10,000 births. It involves solitary or multiple lesions with focal or extensive absence of epidermis, dermis, sometimes subcutaneous tissue and 80 percent of the lesions are localized to the vertex of the scalp [12]. During a good clinical exam, when attention is paid to both location and type of skin defect, ACC can be discriminated from congenital pressure injury.

The etiology of congenital non-iatrogenic pressure injuries is not fully understood. Previous studies showed a relation with oligohydramnios [1]; however, in the case we illustrated this was irrelevant. We suggest that the presence of a large leiomyoma, or another intrauterine space occupying lesion, can result

in a congenital pressure injury when the fetus is pressed against a bony structure.

The treatment for the pressure injury that was illustrated in this case study consisted of daily application of Vaseline. Hydrocolloid treatment may be chosen if the wound produces little to no exudate in order to maintain the moisture of the wound, which is beneficial for wound healing [2,3]. Vaseline increases barrier function of the adult skin [4] and promotes neonatal skin condition and electrolyte balance [5,6], therefore it might promote skin tissue healing in neonates. Although treatment with Vaseline should not be used as a prophylactic therapy, since it is shown to increase the risk of developing nosocomial infections in pre-term infants.

### Conclusion

This is the first case report of a facial congenital pressure injury in a full-term neonate, due to pressure on the neonate's head between a large leiomyoma and

the mother's pelvic bone. Congenital pressure injuries are sparsely described in the literature and we assert that reporting congenital pressure injuries is essential to broaden the perspective of the etiology.

### Ethical approval

The informed consent was obtained from the mother of the patient for publication of this case report.

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### Disclosure statement

No potential conflict of interest was reported by the author(s).

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