



# Nonoperative management of a giant omphalocele using a silver impregnated hydrofiber dressing: a case report

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**Abstract** The surgical management of a giant omphalocele is challenging. Many cannot be closed at birth and must initially be managed nonoperatively with a topical agent to facilitate epithelialization. We report the case of a term, 1-day-old female neonate with a giant omphalocele treated initially with a hydrofiber dressing containing silver (Aquacel Ag; ConvaTec Inc, Skillman, NJ) and then with delayed primary closure.

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Large or “giant” omphaloceles occur in 1 of every 10,000 live births [1]. Giant omphaloceles have a massive sac herniating through fascial defects greater than 8 cm and contain most of the abdominal viscera, including the liver [2]. Most cannot undergo primary closure, and a nonoperative approach must be used. Nonoperative treatment involves application of a topical dressing to escharify and epithelialize the membrane covering the defect. The dressing also needs to protect the membrane from shearing forces and should be able to provide support for the defect to prevent additional herniation.

Most topical agents contain antimicrobials that prevent infection. Multiple agents have been used including povidone-iodine, 70% alcohol, 2% mercurochrome, and silver sulfadiazine [2]. Although these topical agents assist in the epithelialization process and can help prevent infection, they can have toxic adverse effects; and systemic

absorption is a primary concern. When applied to extensive areas of the body and/or tissue damage is present, sulfadiazine may be absorbed systemically and produce adverse reactions [3]. Cosman et al [4] stated that topical administration of povidone-iodine to the newborn's skin causes increased plasma iodine levels, detectable even after a single application around the umbilical stump. The infant with omphalocele is particularly susceptible to iodine-induced hypothyroidism because the area of absorption is large and composed of easily permeable membranes [4].

Newer wound care products do not have these adverse effects. There are few articles describing the use of silver-containing topical creams. Lee et al [5] concluded that the use of silver sulfadiazine dressing changes for initial nonoperative management of giant omphaloceles is a safe and effective bridge to delayed closure and recommend the method as initial nonoperative management. However, silver is usually applied twice daily, resulting in a significant amount of work for the infant's caregivers, taking off the entire dressing twice a day. The hydrofiber dressing impregnated with silver has antimicrobial properties and promotes wound healing by assisting in autolytic debridement. There have not been any

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reports using this type of silver-impregnated dressing. We report the nonoperative management of a giant omphalocele treated using a silver-impregnated hydrofiber dressing (Aquacel Ag; ConvaTec Inc, Skillman, NJ) and delayed primary closure.

## 1. Case presentation

A full-term, 5-hour-old, 2.8-kg Hispanic female neonate was admitted to our neonatal intensive care unit for evaluation and management of a prenatally diagnosed giant omphalocele. The neonate was born to a G2, P2 mother via cesarean delivery. On examination, the omphalocele contained the liver and intestines inside an intact membrane consistent with a giant omphalocele (Fig. 1). The surgical team decided to cover the membrane using a primary dressing of Aquacel Ag and a secondary dressing of silicone-bordered foam. First, the defect was cleansed with isotonic sodium chloride solution and patted dry with sterile gauze. The hydrofiber dressing was applied dry to the entire defect and overlapping approximately 3 cm at the base of the defect. The soft-silicone-bordered foam dressing (Mepilex; Molnlycke Health Care US, LLC, Norcross, GA, USA) used as a secondary dressing was then applied to support the base and cover the entire defect and provide slight pressure to support the contents. The silicone foam dressing benefited the patient by not adhering to the wound bed, preventing damage to the sac by shearing forces, maintaining a moist wound environment, minimizing the risk of maceration, and protecting the wound from outer contamination with its waterproof and bacteria-proof film backing. The secondary dressing was also supporting the omphalocele, gradually reducing its size by using slight pressure with each consequent dressing change. Longer wear time theoretically prevents cross-contamination and a disruption in a moist wound-healing environment that is critical to the healing process. The dressing was initially changed every 3 days for



**Fig. 2** Omphalocele sac at 13 days of age; large amount of epithelialization.

management of the drainage. The omphalocele membrane quickly began to epithelialize (Fig. 2). The neonate began PO feeding the day after birth and reached full feeds in 1 week.

The neonate suffered no comorbidities and was sent home at 17 days of life with outpatient follow-up. Before discharge, her mother had been instructed on care of the omphalocele and was provided with dressing supplies through a durable medical equipment company. At home, the neonate was able to keep the dressing in place for up to 7 days once the drainage had decreased. She was seen initially 5 days postdischarge and followed every 3 to 4 days for 1 month in the outpatient surgery clinic or via telemedicine. These visits allowed for monitoring the dressing changes and assessment of the omphalocele. Her visits eventually decreased in frequency owing to less drainage, and the mother was capable of continuing the dressing changes at home. Her omphalocele sac was epithelialized by 3 months of age. The omphalocele contents gradually reduced into the abdominal cavity; and at 7 months of age, she presented for



**Fig. 1** Initial photograph of giant omphalocele.



**Fig. 3** Abdominal wall defect before surgery.

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