Using Wound Care as Adjunct Management in a Difficult to Reduce Large Gastroschisis: A Case Study

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Introduction

Gastroschisis is a paraumbilical congenital abdominal wall defect in which intestinal viscera herniates usually from a small defect to the right of the umbilicus.

There are some cases of large gastroschisis; these present closure challenges.

This condition is usually managed by primary closure or by a prosthetic silo placement, followed by a staged gradual reduction and then closure by a pediatric surgeon.

In this case, a wound care regimen using an antimicrobial foam dressing*, collagen powder†, and bismuth petrolatum gauze‡ was used as adjunct management in the reduction and healing by secondary intention after surgical mesh± grafting.

Case Description

Late preterm infant born at 36 3/7 weeks with a large gastroschisis. At birth patient's intestines were placed in a silo bag and incrementally reduced to the abdomen by nine days of life. Visceral evisceration occurred at 3 days post repair and required a second reduction. The hospital course was complicated by respiratory failure requiring invasive respiratory support, anasarca and acute kidney injury requiring ultrafiltration therapy.

Methods

At 20 days of life, patient underwent gastroschisis repair with a surgical mesh± placement and partial skin closure.

The reduction site was then managed by pediatric surgery using daily betadine gauze at the site for one month, but epithelization of surgical mesh± to skin failed to occur.

A wound care regimen utilizing collagen powder† for 7 weeks; an antimicrobial foam dressing* for 11 weeks and later bismuth petrolatum gauze‡ for 2 weeks was used as an adjunct to the surgical mesh± to reduce and heal the defect. Wound care was provided every 3 - 5 days.

Results

One month after surgical mesh± grafting, reduction and closure of the abdominal defect were stalled. A wound care regimen as described was a successful adjunct in achieving the reduction and closure of this large gastroschisis by secondary intention four months after installation. See Figure 1.

Conclusion

Large gastroschisis may be closed using prosthetic materials for example Surgisis, Gore-Tex, Silastic Silo, and autologous materials – umbilical cord, dura, musculocutaneous flaps, and meshed skin grafts. This case study showed that a wound care regimen can be a good adjunct and sometimes essential in these cases.

Figure 1

Figure 1a. May 6, 2022. Wound at one month after Biomesh graft placement exhibiting delayed epithelialization of graft with skin. Wound Care was initiated at this point. Area of Defect was 56 cm^2.

Figure 1b. May 9, 2022. Biomesh epithelialization with skin improving. Wound is now less edematous and has an area of 42 cm^2.

Figure 1c. May 11, 2022 Surgical approximation of the Biomesh graft was performed by the Pediatric Surgeon.

Figure 1d. June 2,2022. Fraying of the Biomesh occurred due to adjustment on 5/11 and aging of graft prevented further adjustment by surgeon. Defect reduced to 14 cm^2 after 1 month of added wound care and recent approximation.

Figure 1e. July 3, 2022. Continued contraction, granulation of defect along with dissolution of Biomesh and full reduction of gastroschisis. Area now 6cm^2 .

Figure 1f. August 1, 2022. Dissolution of Biomesh, full reduction of gastroshisis, continued contraction and granulation of defect 4 months after the initiation of wound care. Area now 5cm^2 .

Figure 1g. August 9, 2022. S/P Hydrofera Blue Ready discontinuation. Xeroform gauze covered with sterile gauze used at this point. Patient discharged home. Follow-up in Pediatric Surgery clinic. Area now 3 cm^2 .

References

1. Adikibi, B. T. & O'Toole, S. (2014). Reverse tissue expansion in gastroschisis: what to do if the defect is too large to close after silo removal? Journal of Neonatal Surgery, 3(4), 47 – 49.

2. Bhat, V., Moront, M. & Bhandari, V. (2020). Gastroschisis: A State-of-the-Art Review. Children, 7, 302; doi:10.3390/children7120302.

3. Ferreira, R. G. , Mendonca, C.R., Ramos, L. L., de Abreu, T., do Amaral, W. N. & Ruano , R. (2022). Gastroschisis: a systematic review of diagnosis, prognosis and treatment. The Journal of Maternal-Fetal and Neonatal Medicine, 35:25, 6199 – 6212, doi: 10.1080/14767058.2021.1909563

4. Maawali, A. A. & Skarsgard, E. D. (2021). The medical and surgical management of gastroschisis. Journal of Early Human Development. Elsevier; doi.org/10.1016/j.earlhumdev.2021.105459

*Hydrofera Blue Ready ® Hydrofera, LLC, U.S. A.
†Stimulen ™Southwest Technologies, U. S. A.
‡ Xeroform™Covedien, U. S.A.
±Strattice Mesh™Allergan Aesthetics, U. S. A.

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