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## BACKGROUND

Fetal spina bifida closure results in improved outcomes for the child compared to postnatal surgery but is associated with significant maternal morbidity. Enhanced Recovery After Surgery (ERAS) protocols are multimodal, evidence-based care plans that have been adopted for a wide range of surgical procedures to promote faster and better patient recovery and shorter hospitalization. This study aims to explore if fetal centers have implemented ERAS principles in their perioperative management protocols for fetal spina bifida surgery.

## METHODS

53 fetal therapy centers offering prenatal surgery for open spina bifida were identified through the International Society for Prenatal Diagnosis website, a literature and Google search. All centers were invited to complete a digital questionnaire, covering their pre-, intra- and postoperative management. An overall score was calculated per center based on the center's compliance with 20 key ERAS principles, extrapolated from ERAS guidelines for cesarean section, gynecologic oncology and colorectal surgery. Each item was scored 1 or 0 when they did or did not comply with each principle.

<b>PREOPERATIVE</b>	<b>11. Fluid management</b> Restrictive IV fluids
<b>1. Education and anxiety reduction</b> Targeted education	<b>12. Surgical incision</b> Trocar or low transverse abdominal
<b>2. Fasting for solid food</b> No overnight fasting	<b>POSTOPERATIVE</b>
<b>3. Fasting for clear fluids</b> Clear fluids up to 2h before surgery	<b>13. Regional analgesia</b> Epidural or TAP block
<b>4. Oral carbohydrate loading</b> Recommended	<b>14. Paracetamol</b> Recommended, first line
<b>5. Bowel preparation</b> Not recommended	<b>15. Early feeding</b> Day of surgery
<b>INTRAOPERATIVE</b>	<b>16. Ileus prevention</b> Chewing gum, bisacodyl, or coffee
<b>6. Hypothermia prevention</b> Use active warming devices	<b>17. Urinary catheter removal</b> No later than day 1
<b>7. Prophylactic antibiotics</b> First gen. cephalosporin	<b>18. Thrombosis prophylaxis</b> LMWH and/or TED stockings
<b>8. Skin disinfection</b> Alcohol-based (chlorhexidine)	<b>19. Start mobilization</b> No later than day 1
<b>9. PONV prevention</b> Multimodal	<b>20. Activity level after discharge</b> No bed rest
<b>10. Fluid preloading</b> Not recommended	

## RESULTS

The questionnaire was completed by 46 centers in 17 countries (response rate 87%). Twenty-two centers (48%) exclusively perform open fetal surgery (laparotomy and hysterotomy), whereas 14 (30%) offer both open and fetoscopic procedures and 10 (22%) use fetoscopy only. Perioperative management of patients undergoing fetoscopic and open surgery was highly similar. The mean ERAS score was 12.3 (SD 2.41, range 7-17). Center compliance was the highest for the use of regional anesthesia (98%), avoidance of bowel preparation (96%), and thrombosis prophylaxis (96%), while the lowest compliance was achieved for preoperative carbohydrate loading (15%), postoperative nausea and vomiting prevention (33%), avoidance of overnight fasting (33%) and a 2-hour fasting period for clear fluids (20%). The start of patient feeding and recommendations regarding activity level vary considerably (Figure 1 and 2). The mean ERAS scores were non-significantly higher in centers with a short (2-5 days) and median (6-10 days) compared to long ( $\geq 11$  days) hospital stay ( $12.8 \pm 2.40^*$ ,  $12.0 \pm 1.96$ , and  $10.0 \pm 3.61^*$ , respectively,  $*p = 0.07$ ).

## CONCLUSION

The perioperative management of fetal spina bifida surgery is highly variable across fetal therapy centers worldwide. Standardizing protocols according to ERAS principles may improve patient recovery and reduce maternal morbidity after fetal spina bifida surgery.

Figure 1 – Start patient feeding postoperatively

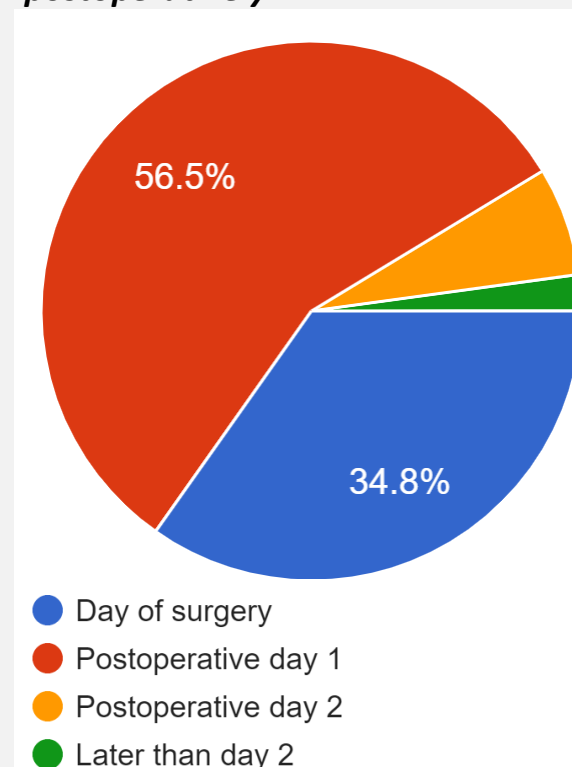


Figure 2 – Recommended level of activity after discharge

