

**TITLE: FETOSCOPIC REPAIR OF MYELOMENINGOCELE: TECHNIQUES, RESULTS AND MATERNAL-FETAL OUTCOMES**

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**Introduction**

For myelomeningocele (MMC), proven fetal benefits of open maternal-fetal surgery (MFS) must be balanced against the risks of prematurity and maternal morbidity. With the recent evolutions in minimally invasive techniques and bioengineering, endoscopic MFS has become a realistic goal that might reduce the associated risks of open MFS and extend its indications.

**Methods**

We performed a review of the literature concerning fetoscopic MMC repair developed in humans. We compared their techniques, results and maternal-fetal outcomes.

**Results**

Three endoscopic techniques have been developed, all using general anesthesia, intrauterine CO<sub>2</sub> insufflation, 3 operative trocars and undermining of the skin surrounding the MMC:

- 1) The American: maternal split-thickness skin graft and absorbable hemostat coverage congealed with fibrin glue.
- 2) The German: collagen patch coverage sutured over the skin.
- 3) The Brazilian: biosynthetic cellulose patch coverage sutured under the skin.

Even if these techniques are very demanding with long operative time and the fetal complications are important (table), the maternal complications are low (1.9% pulmonary edema). The Brazilian technique could result in better preservation of nerve tissue and less adherence of the spinal cord to the scar.

Technique	Intra-operative hemorrhagic complications	PPROM	Mean prematurity (weeks of gestation)	Fetal death
American (n=6)	33%	100%	29.7	50%
German (n=70)	0-36.8%	78.6-84.3%	28.8-33	2-15.8%
Brazilian (n=4)	0%	100%	32	0%

**Conclusion**

Fetoscopic patch coverage is promising but needs refinement of techniques in experimental studies. The high rates of PPRM and preterm birth remain unsolved problems.