Open Spina Bifida surgery

- PRENATAL REPAIR OF SPINA BIFIDA USING UTERINE WOUND RETRACTOR: A SINGLE-CENTER COHORT STUDY
- Benefits and complications of fetal and postnatal surgery for open spina bifida: systematic review and proportional meta-analysis
- Isolation and characterization of human cKIT positive amniotic fluid stem cells obtained from pregnancies with spina bifida
- Achieving water-tight open spina bifida closure through a novel three-port three-layer fetoscopic repair
- MRI Revealing Ovarian Non-salvageable Torsion Masquerading as a Pelvic Mass in a Young Woman With Enterocystoplasty and Neurogenic Bladder
- Multiple Giant Stones in an Augmented Bladder: A Case Report
- Global variability in fetal spina bifida surgery: a survey of neurosurgical strategies
- Outcome of Children With Prenatally Diagnosed Saccular Limited Dorsal Myeloschisis: The Importance of Accurate Diagnosis

“Open spina bifida” is a broader term that encompasses all neural tube defects where the spinal cord is exposed (without skin covering), including myelomeningocele.

Myelomeningocele repair — either prenatal (fetal) or postnatal (after birth) — is often what people mean when they refer to “surgery for open spina bifida.”

⚠ Key Distinctions (if precision is needed): “Open spina bifida” technically includes other rare variants (e.g., myeloschisis) — though in practice, >95% of OSB cases are MMC.

MMC repair can be done via:

Open fetal surgery (via hysterotomy)

Minimally invasive fetoscopy (hybrid or percutaneous)

Postnatal closure

 Summary:

In clinical and surgical literature, “myelomeningocele repair” is effectively synonymous with “open spina bifida surgery,” unless the context requires distinguishing between different types of open neural tube defects.

Open Spina Bifida surgery can be performed postnatally or prenatally, using different techniques with varying outcomes. Below is a comparative table of the main surgical options:

Surgical Technique Comparison

Feature / Outcome	Postnatal Repair	Open Fetal Surgery (MOMS Trial)	Fetoscopic Fetal Surgery (Hybrid / Percutaneous)

Feature / Outcome	Postnatal Repair	Open Fetal Surgery (MOMS Trial)	Fetoscopic Fetal Surgery (Hybrid / Percutaneous)
Timing	< 48 hours after birth	19–26 weeks of gestation	19–26 weeks of gestation
Surgical Access	Neonatal laminectomy & closure	Maternal laparotomy + uterine hysterotomy	Laparoscopy or percutaneous trocars into uterus
Neurosurgical Closure	Standard microsurgical closure	In utero placode reposition & duraplasty	Same goals, more technically demanding
Hydrocephalus (Shunt Required)	~80%	↓ ~40%	~35–50% (varies by study)
Chiari II Malformation	Almost universal	↓ incidence and severity	↓ incidence, possibly similar to open fetal
Walking at 30 Months	~55–60%	↑ up to ~70%	Similar or higher (limited data)
Premature Birth (<32 weeks)	Low (term birth expected)	↑ ~12–15%	↑↑ ~13–33% depending on technique
Preterm Rupture of Membranes (PROM)	None	~30–35%	↑↑ Up to 80% in percutaneous fetoscopy
Uterine Rupture (Next Pregnancy)	No risk	~9%	Unknown / likely lower than open
Placenta Accreta (Next Pregnancy)	No increased risk	~4%	Unknown
Technical Complexity	Familiar, standardized	Requires specialized multidisciplinary team	Highly complex, steep learning curve
Maternal Morbidity	Minimal	Moderate to high (surgical + obstetric risks)	Variable; possibly lower than open fetal surgery
Global Availability	Widely available	Only in fetal surgery centers	Very limited; still under development in many places
Long-term Follow-up Data	Well established	10–15 years follow-up (e.g. MOMS)	Sparse and heterogeneous

Key Points for Neurosurgeons

- Postnatal repair remains the **most widely available and safest standard**, especially in non-specialized centers.
- Open fetal surgery shows **functional advantages** but at the cost of **maternal and obstetric risks**.
- Fetoscopic surgery is **promising but still evolving**, and lacks robust long-term data.
- Regardless of technique, patients require **lifelong multidisciplinary follow-up**, especially for:
  - Hydrocephalus and CSF diversion
  - Tethered cord syndrome
  - Neurogenic bladder and bowel management

Fetoscopic Myelomeningocele Repair

Fetoscopic Myelomeningocele Repair.

Systematic review and proportional meta-analysis

In a systematic review and proportional meta-analysis Kunpalin et al. [1] sets out to clarify a clinically murky field—prenatal and postnatal surgery for open spina bifida (OSB)—but ends up showcasing how data accumulation can masquerade as insight while offering little in terms of real-world guidance.

1. Mixing apples, oranges, and fetoscopies: The authors lump together studies of wildly differing quality and surgical approaches (classic hysterotomy, mini-hysterotomy, hybrid fetoscopy, percutaneous fetoscopy), as if they were variations on the same technique. This methodological free-for-all undermines the validity of any comparative conclusions. Clinical and methodological heterogeneity is not acknowledged as a critical flaw, but instead paraded as statistical inclusiveness.

2. Misleading proportions, hollow outcomes: The exclusive use of single-proportion meta-analyses to report outcomes and complications is, at best, naive. No direct comparisons, no adjustments for confounding factors—just raw percentages that invite false equivalencies. A reader might come away thinking that 80% PROM in percutaneous fetoscopy is comparable to 15% preterm birth in mini-hysterotomy. This is not just misleading—it’s dangerous.

3. White-coat selection bias: By limiting inclusion to studies that mirror the MOMS trial criteria, the authors create an artificial homogeneity that favors prenatal surgery outcomes while ignoring broader real-world diversity. While they claim to assess risk of bias, no meaningful integration or critical discussion of bias is provided in the results or conclusions.

4. The illusion of functional benefit: Ambiguous claims about toddlers walking at 30 months are presented without context: no survival bias correction, no clarity on assessment methods, and no accounting for socioeconomic, neurological, or rehabilitative variables. Crucially, maternal long-term quality of life, psychosocial impact, and economic cost are entirely omitted. What we’re left with is a sterile list of percentages with no human dimension.

5. Self-congratulatory conclusions: The article ends by suggesting that its data should inform clinical decision-making. In reality, it offers a descriptive inventory of complications without analytical depth, cost-benefit appraisal, or any patient-centered perspective. A catalog of numbers is not a compass for care.

Final verdict: This is not clarification—it is confusion dressed in statistics. Rather than advancing understanding, this paper reinforces a superficial narrative by aggregating inconsistent data without critical rigor. In a field that urgently needs nuanced clinical insight, this was a wasted opportunity.

1)
Kunpalin Y, Karadjole VS, Medeiros ESB, Dominguez Moreno M, Sichitiu J, Abbasi N, Ryan G, Shinar S, Snelgrove JW, Kulkarni AV, Van Mieghem T. Benefits and complications of fetal and postnatal surgery for open spina bifida: systematic review and proportional meta-analysis. Ultrasound Obstet Gynecol. 2025 Jun 10. doi: 10.1002/uog.29240. Epub ahead of print. PMID: 40492626.

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