

ALLOPLASTIC MATERIALS IN PELVIC FLOOR SURGERY EXPERIENCES REPORTED FOR PROLAPSE AND INCONTINENCE PROCEDURES

Aims of Study

The report will reflect our experiences with different materials used in pelvic floor reconstructive surgery. It will focus on stability of the procedures results and the materials side effects, data collected over more than 5 years.

Methods

From 1998 to 2002 about 1000 cases with prolapse and almost 1500 cases with stress incontinence were treated at St. Josef's Hospital using different slings for urinary incontinence and different materials for tension-free prolapse repair. The slings used were TVT® (Gynecare, D) (where we have gathered the largest experience – more than 700 cases were performed), SPARC® (AMS, D), IVS® (Tyco Healthcare, D) for mid- and paraurethral approach according to Peter Petros, Uretex (Bard, UK), Serapren® Band (Serag- Wiessner, D) and Monarc® (AMS, D). For prolapse surgery we used Gynemesh® (Gynecare, D), Vypro® (Ethicon, D), Pelvicol (Bard, UK) and Biomesh (Cousin, F). We can also report on 50 cases of so called bridge plasties (see below). At least 50 cases were performed with each material to be included in this report.

Results

Two different types of material came to use in tension-free incontinence procedures – mono- and multifilament slings:

| | Type | cure-rate (dry) (> 6 months) | main complications (type and rate) | Inflammatory Tissue reaction | urgency |
|--------------|--------------|---------------------------------|---------------------------------------|--|---------|
| TVT® | monofilament | 87% | Bladder perforation 4% Bleeding 2% | - | 6% |
| Midline IVS® | | 67% | Bladder perforation 2% Bleeding 2% | 4 cases of abscess formation suprapubically (out of 120 cases) | 12% |
| SPARC®* | monofilament | 91% | | | |
| Uretex®* | bifilament | 89% | | | |
| Serapren® | monofilament | 92% | | | |
| Monarc® | monofilament | 90% | Bladder perforation 0% Bleeding 0% | - | 2% |

* using IVS-Tunneler-like Introducer

In prolapse repair the following materials were used:

| | type | healing | tactile evaluation | major problems | Further recommended use |
|---------------|--|---|---|---|---|
| Gynemesh® | Monofilament Prolene® | Areactive healing around uncovered areas, no problems if covered properly | Hard, Dense, reduced elasticity | Formation of needle-like fibres when cut stabbing through vaginal skin, erosions, discharge | no, because of frequent erosions |
| Vypro® | Combined polypropylene/ Vicryl® | same as Gynemesh® | Retraction with formation of dense scars – unpredictable degree of retraction, soft enough in non-retracted areas | Retraction, Difficulties healing in when vaginal suture gets dehiscent, discharge | no, because of unpredictable retraction |
| Pelvicol® | Porcine collagen | Being vascularised uncovered areas form vulnerable surface that is secondarily epithelialised | Very natural and stable tissue layer, in very few cases slightly more dense than normal tissue | Bleeding and discharge when vagina does not heal above implant price | yes, if biomaterial is accepted by the patient |
| Biomesh® | Non-woven mesh | Difficulties only when not properly cut to fit defect – erosions (level of vaginal entrance) | very soft, no significant retraction, no palpable scar formation | Healing problems only occur when vaginal tissue was cut too excessively before closing defect | yes, if synthetic material is accepted by the patient |
| Bridge plasty | De-epithelialised segments of excessive vaginal skin used as an implant to stabilize the subvaginal weakened connective tissue layer | When healing difficulties occur above implant it resurfaces and is re-epithelialised, de-epithelialisation by coagulation of the surface can lead to prolonged discharge and inflammation | normal tissue density | Surfacing of implant and healing difficulties due to mismatch between size of implant and width of defect | Only in large recto-enteroceles where elevation and fixation of underlying rectum is a goal of the operation at the same time (descending perineum) |

Conclusions

Non-woven material obviously does not follow the same rules healing in than multifilament slings do. The latter give poor results compared to mono- or bifilament slings and are responsible for quite some cases of unfavourable outcome all due to (late-onset) inflammatory reactions with abscess formation and loss of more or less of the implanted material. Due to its density it should not be used in multiple-layer technique. Biomaterials such as Pelvicol® are a nice but expensive alternative when they are accepted by both surgeon and patient. Even though there are no cases of rejection using woven macroporous polypropylene implants the property of its edges when cut to fit the defect and the shrinkage of the implant according to its composition (Composit shrinks more than pure polypropylene, non-woven polypropylene mesh does not shrink significantly (more than 10%). Further investigation should improve biocompatibility of synthetic materials and make us independent from biomaterials which produce very nice results used as a connective tissue matrix in reconstructive pelvic floor surgery.