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REPAIR OF VAGINAL WALL PROLAPSE – USING AMNIOTIC MEMBRANE GRAFT

Hypothesis / aims of study

Our objective is to describe a simple, inexpensive, and effective surgical technique for the trans-vaginal repair of an anterior and posterior vaginal wall prolapse, using a fresh amniotic membrane graft. The amniotic membrane graft is a natural human protein, attracting collagen formation, fibrinogen, and causing mild fibrosis, without being rejected, it will adhere to, and integrate with the local pubo-cervical fascia providing a fibrotic sheath, necessary for support and augmentation of the weak local fascia, and will be completely absorbed by the body.

Study design, materials and methods

The Amniotic Membrane is acquired from fresh specimen placenta, delivered by elective caesarean section with intact membrane, from our assisted reproduction unit. Donor women are subjected to HIV, Hepatitis B & C, Syphilis, Toxoplasmosis, Blood group & Rh, lab tests before delivery.

The amniotic membrane needed is cut from the fresh placenta, rinsed with sterile saline solution to remove any debris, after separation of the chorion; and put in povodine iodine for 10 minutes then rinsed again. It can also be put in a solution of 80 mg. Gentamycine and 1 gr. Ampicilline for an additional 10 minutes, then refashioned before use.

All patients were subjected to a questionnaire, detailed history, physical exam, urodynamics, and lab tests to evaluate all possible pelvic floor defects, and urinary incontinence, they signed a consent form, after explaining the procedure.

Candidates for surgery are chosen if the anterior and posterior vaginal wall prolapse are grade II or greater. Additional surgical procedures were performed if indicated.

The patient is placed in the dorsal lithotomy position, prepped and draped in the usual sterile fashion. The vaginal walls are injected with dilute xylocain-epinephrine solution, for homeostasis and pain relief. A midline incision is made through the anterior wall starting from the urethro-vesical junction to the vaginal apex near the cervix. The dissection is carefully performed to separate the vaginal epithelium from the underlying fascia; then continues latterly both sharp and blunt dissection to separate the bladder from the vagina, and reach the arcus tendineous fascia pelvis (ATFP), from the level of the urethro-vesical junction to the ischial spines. A finger is used to lightly clear the fascia lying over the ATFP.

A small round body needle on a needle holder, or an anurism needle is used to pass 2 sutures of 0-PDS on each side into the ATFP. An index finger is used to identify the ischeal spine and the ATFP, the needle is then guided into position by sliding it next to the index finger, a thin retractor helps to provide better visualization. The first suture is placed through the ATFP, 2 cm superior to the ischial spines and picked up by a needle holder. The second suture is placed through the distal portion of the ATFP, close to the pubic bone, a third suture may be placed between the first and second suture. The same procedure is repeated on the opposite side so that a total of 4 sutures are placed. Beware of the obturator neurovascular bundle during the placement of the sutures near the ischial spine, especially if sutures are placed too anterior.

The graft is then laid onto the anterior compartment with the mesenchymal surface towards the bladder fascia, and is trimmed if too large. A double loop suture is fixed to the graft, 1cm from the edge, using the previous sutures in ATFP, taking also the pubo-cervical ligament lateral edges, first tying the sutures at the level of the ischial spines to ensure that the graft lies down flat and tension free, with the corners of the graft next to the ATFP on each side, then the sutures at the distal portion of the ATFP, are tied down. Care being taken not to stretch the graft too much as the membrane may break.

Finally, the graft is attached to the cervix at the peri-cervical ring, with delayed absorbable suture to provide additional support. The excess vaginal epithelium is trimmed off and the vaginal epithelium is closed in an interrupted suture fashion using absorbable suture.

16 patients had this procedure till now under spinal anesthesia, average age was 46-6years, average parity was 4.2, 3 had it with vaginal hystrectomy(ant. &post.), 5 had an anterioir and posterior vaginal repair and 8 had a posterior vaginal repair only.

Results

- Patients were advised to come in after 30 days, 60 days, 90 days, 6 months and 12 months, for postoperative assessment, or if anything went wrong.
- All patients had a 30 day follow up, 8 patients had a 60 day follow up, 6 patients had a 90 day follow up and 4 patients has a 180 day follow up .
- No infections or rejections were noted till now, no bleeding or wound separation, 2 patient had mild de novo urgency and was relieved by anticholinergics.One patient had delayed wound healing, relieved by antibiotics, and analgesics.

(Max. period of study 180 days)

Interpretation of results

The high recurrence rate after a cystocele repair can result from various factors, like, incorrect diagnosis of site specific defect, poor quality of vaginal fascia and muscular tissue, or an inherent connective tissue weakness. In cases of severe grade III or IV cystoceles, there is no good, usable supportive tissue fascia available for repair, especially in long standing cystocele. The advantage of the trans-vaginal, para-vaginal repair with graft augmentation is that the procedure provides support for all types of defects; lateral, transverse, and midline defects at the same time. Posteriorly; graft placement can also cure a large enterocele by blocking its decent.

We believe that the most important step in anterior graft placement is the anchoring of the graft to healthy supportive tissue, specifically to the ATFP, bilaterally at the four corners. If the ATFP proves to be weak and lax, a bigger sized graft may be used to be anchored to the sacro-spinous ligament distally and the obturator internus muscle dorsally. However this may prove

difficult sometimes using our technique, a Caprio suture anchoring device (Boston Scientific – USA), may prove to be a better tool for that purpose, if available.
A full sized trapezoid graft recreates and re-establishes adequate support for the urethra, bladder and entire anterior vaginal wall. The goal of this procedure is to completely rebuild and replace the fascia defect that exists. Good suspension from the vaginal apex along the entire vaginal wall, anterior and posterior to the vaginal opening is also mandatory, for long lasting success. This technique is not used for treatment of stress urinary incontinence; a sub-urethral sling procedure may be needed for that purpose. Human amniotic membrane is believed to be non-immunogenic and hence the recipient will not reject it. Therefore, the use of systemic immunosuppressive drugs is not required

Concluding message

Currently, the main operation for vaginal wall prolapse repair is still the standard anterior and posterior colpo-periniorrhaphy and its recurrence rate ranges from 40-60 %. This high recurrence rate creates the necessity for developing new surgical techniques and better long-term solutions. Surgeons have been investigating the use of synthetic and biological grafts in vaginal wall prolapse repairs. The use of an absorbable polyglactin 910 mesh (Vicryl) has shown little benefit in its use to correct vaginal wall prolapse (42%), and the use of a synthetic permanent polypropylene mesh for vaginal repair shows a mesh erosion rate of 18%, de novo urgency rate of 20%, and dysparunia 22% postoperatively. The mesh erosion rate or infection rate increased *four-fold* when the mesh was introduced vaginally as compared to the abdominal route in pelvic floor reconstruction cases. Many pelvic surgeons, are now using biological grafts for vaginal prolapse surgery, such as cadaveric fascia lata, cadaveric dermis Alloderm,…etc . A new skin tissue generated matrix Repliform has given some hope, but is expensive. The use of Amniotic Membrane came to our personal attention as a possible biological graft material, since it is non-immunogenic, it will not be rejected, and as of protein nature, will be integrated and absorbed by the body after attracting fibrin and collagen, giving necessary support. Till now this technique has given us satisfactory results with no serious complications, and we continuing this study to help us evaluate the effectiveness and safety of fresh amniotic membrane graft augmentation in vaginal prolapse repairs, we feel that more studies are needed to better evaluate other surgical techniques for vaginal wall repairs, with and without grafts.

References

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Disclosures

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