

W36: Complications in pelvic organ prolapse surgery. How to stay out of trouble.

Workshop Chair: Stephen Jeffery, South Africa

21 October 2014 14:00 - 18:00

Start	End	Topic	Speakers
14:00	14:05	Introduction	Stephen Jeffery
14:05	14:20	Tips and tricks. How I do it safely: Native tissue vaginal surgery	Jerry Blaivas
14:20	14:35	Tips and tricks. How I do it safely: Mesh-based vaginal surgery.	Stephen Jeffery
14:35	14:50	Tips and tricks. How I do it safely: Straight stick sacrocolpopexy	Kimberly Kenton
14:50	15:05	Tips and tricks. How I do it safely: Robotic sacrocolpopexy	Catherine Matthews
15:05	15:30	Discussion	All
15:30	16:00	Break	None
16:00	16:15	Selecting the ideal operation: Balancing risks and benefits	Kimberly Kenton
16:15	16:30	Managing Visceral Injury: Bladder and bowel.	Jerry Blaivas
16:30	16:45	Pain and Dyspareunia: prevention and management.	Catherine Matthews
16:45	17:00	Medico-legal issues: Keeping the lawyers out of your operating room.	Stephen Jeffery
17:00	18:00	Case presentations by all four speakers followed by delegate and panel discussion	All

Aims of course/workshop

Complications are unfortunately a reality facing every surgeon performing pelvic floor reconstructive procedures. In this workshop, four expert surgeons will be describing their personal tips and tricks in performing safe surgery. This will include native tissue repair, vaginal mesh procedures, laparoscopic and robotic sacrocolpopexy. The management of a broad range of complications will be discussed. We will also cover procedure selection and balancing efficacy and risks. The faculty will be discussing a number of their individual complications and how these were managed. This promises to be a practical, surgically orientated workshop.

Tips and tricks. How I do it safely: Native tissue vaginal surgery

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The controversy rages on. In the USA, the Food and Drug Administration is considering reclassifying vaginal prolapse mesh from a class 2 (moderate risk) to a class 3 (high risk) device. Why? Because there have been numerous reports (and likely many more unreported) of life style altering complications associated with vaginal mesh surgery including refractory pelvic pain and dyspareunia, vaginal extrusion, lower urinary tract erosion, ureteral, bowel vascular and nerve injury and fistula. So why do surgeons continue to do these operations? Because they believe (and so do I) that the long term results are superior, the surgery is much easier to perform and much easier to learn. But at what cost? That remains to be seen, but in my judgment the current mesh prolapse techniques, performed by the average surgeon have significant short and long term morbidity (at least 5%, possibly much higher). Many, if not most of these complications are life style altering and refractory. So, at the least, both the surgeon and the patient should be made aware of the implications of such complications, and in my judgment, to date that has not happened very well. And, then there are also the potential long term complications related to mesh degradation, migration, inflammation and carcinogenesis. Remember cigarette smoking, asbestos and thalidomide! ,

Of course, native tissue surgery has its complications too – perhaps just as common or even more common, but rarely are they life style altering and, most of the time we can fix them. And the long term failure rate will likely be higher, but as Dr. Kenton points out in the accompanying summary, some “surgical failures” are not seen as failures by the patient and, some “surgical successes” are failures from the patient’s viewpoint. Hence the importance of patient reported outcome.

So, here are my “tricks of the trade” for native tissue repairs.

- Know your patient – her (realistic) expectations, her symptoms and the extent of the prolapse. That means that the patient should confirm that your exam mimics the farthest protrusion she ever experiences. If not, keep examining (standing position, late in the day, full bladder).
- I do not recommend “prophylactic” surgery during prolapse repairs despite some evidence to the contrary. So I don’t recommend hysterectomies or slings except for medical reasons; I only “fix what is broke.” You rarely need to do a hysterectomy to achieve a good prolapse repair.
- All prolapse repairs require a good supporting structure - a well supported apex. Apical support can be the uterus (if it is well supported), the uterosacral or sacrospinous ligament or the sacral promontory.
- There should be broad direct contact with the supporting structure and the connective tissue (it’s not really fascia) that supports the bladder, rectum, uterus or vaginal apex. No air knots.

- For anterior repairs, the bane of our existence and (I believe) the reason for a higher failure rate, is that even with good apical support, there is often a paravaginal defect and insufficient strong tissue to reach the lateral pelvic sidewall and arcus tendineus. Hence, the popularity of mesh. For these patients, it is particularly important to achieve good apical support and, I prefer a multilayer imbrication of pubocervical fascia using very superficial bites and interrupted figure of 8 sutures. I first learned this technique decades ago from a gynecologist, and at the time, I thought he was just a wimp – afraid to put “real sutures” in and afraid to go as far laterally and superiorly as I thought necessary. Over time, I came to believe that these wide dissections cause more problems than they cure unless there is good central tissue to attach and there often is not. I could be wrong about this, but it seems to work in my hands
- Know your surgical anatomy – particularly the plane of dissection that you desire – superficial or deep to the pubocervical fascia (for lack of a better word). In my judgment (and most disagree) when you inject fluid subvaginally, it does the dissection for you and “it” decides what plane you are in. Sharp, careful dissection is the mark of surgical expertise. I could be wrong about this too; try it both ways and determine for yourself.
- For anterior and apical repairs, the ureter always lurks. I place ureteral catheters routinely for easy palpation and inject indigo carmen before removing them, so I can see the ureteral jet almost immediately. You CAN palpate the ureter over a retractor during ureterosacral ligament repairs.

Tips and tricks. How I do it safely: Mesh –based vaginal surgery

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The decision to use vaginal mesh in pelvic organ prolapse (POP) surgery is controversial. This was recently highlighted on 29 April 2014 when the U.S. Food and Drug Administration issued two proposed orders to address the health risks associated with surgical mesh used for transvaginal repair of POP. If finalized, the orders would reclassify surgical mesh for transvaginal POP from a moderate-risk device (class II) to a high-risk device (class III) and require manufacturers to submit a premarket approval (PMA) application for the agency to evaluate safety and effectiveness. At the time of writing this abstract, the FDA was awaiting comments on the proposed order for 90 days.

The safest surgical approach to using a vaginal mesh graft is to consider whether it is indeed necessary to use a prosthetic material in the planned procedure. While a large number of high-volume pelvic floor surgeons completely avoid using vaginal mesh in prolapse pelvic floor surgery, there is good long term data to support the use of these products in selected cases.

Every surgeon embarking on a vaginal mesh operation has to consider a number of important issues before proceeding. Studies have shown that re-intervention rates for vaginal mesh based techniques are higher than for both native tissue surgery and abdominal mesh procedures. Complications are also much higher in the hands of low-volume surgeons and in those inexperienced in the use of mesh. It is also prudent to review the guidelines on mesh of the individual societies and associations before proceeding.

A robust indication to use mesh is mandatory. Most surgeons who have continued to use mesh reserve it for women who have a high risk for recurrence in the anterior or apical compartment. These include women with a recurrent cystocele and women with a vault prolapse with a large anterior compartment component. It is never indicated for posterior compartment surgery.

It is essential to counsel the patient thoroughly pre-operatively. This discussion should include the increased risks of re-intervention, exposure, erosion and most importantly, the risk of post-operative pain. The women should also be informed of the alternatives, including conservative measures, native tissue surgery and abdominal sacrocolpopexy if appropriate.

In order to minimise the risk of post-operative complications, it is essential to select an appropriate mesh device. It is essential to use a device that has intra-operative adjustability and that provides adequate apical support. The anterior single-incision mesh kits that attach onto the sacrospinous ligament are the procedures of choice. It is safer to opt for the product with the lightest mesh and smallest surface area. It is also essential to prescribe pre-operative estrogen cream.

The following procedural steps ensure the safest placement of the mesh:

- Start with a completely empty bladder and retain the catheter with bag attachment so that the urine can be monitored for haematuria.

- Inject a large amount of hydrodissection (between 150 and 200ml), this ensures an adequate depth of dissection.
- Perform a good full thickness vaginal dissection.
- Get into the right plane using sharp dissection, before resorting to blunt dissection. This decreases the risk of bladder injury.
- During dissection, constantly monitor the urine for haematuria.
- If blood is noted in the urine, either do a dye test or perform a cystoscopy before proceeding to mesh placement.
- If the bladder is injured during the dissection, it would be prudent to proceed with a native tissue repair instead of a mesh procedure.
- Secure the mesh to the vaginal apex with two sutures.
- Make sure that the mesh attachment is well clear of the Pudendal nerve (ie 2cm from the Ischial Spine)
- Once the mesh is deployed ensure that it is completely tension-free. Using a mesh with post-insertion adjustability ensures that this is possible.
- It is prudent to perform a cystoscopy after every vaginal mesh procedure.

It is essential to monitor the patient carefully for the development of post-operative complications.

Tips and tricks. How I do it safely: Straight – Stick Sacrocolpopexy

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Multiple comparative effectiveness trials have demonstrated the anatomic superiority of open abdominal sacrocolpopexy compared to vaginal native tissue repairs for apical pelvic organ prolapse; however, laparotomy is associated with increased complications and recovery times. To maximize anatomic outcomes and minimize recovery, minimally invasive techniques using straight stick or robotic assisted laparoscopy are increasing in popularity. A recent multicenter randomized trial done in the UK demonstrated the equivalence of open and laparoscopic sacrocolpopexy suggesting laparoscopic sacrocolpopexy is safe and effective for treatment of pelvic organ prolapse. Similarly, multiple randomized trials have shown similar anatomic and symptom outcomes after laparoscopic and robotic sacrocolpopexy.

As with most surgical procedures, patient selection, teamwork, patient positioning and surgical exposure are pivotal to successful laparoscopic sacrocolpopexy. Most women who are candidates for open sacrocolpopexy are eligible for a laparoscopic procedure, which can be preformed with or without concomitant hysterectomy. Due to increased mesh exposure/erosion rates (up to 4-5 fold increases) after total hysterectomy, many surgeons advocate supracervical rather than total hysterectomy at the time of sacrocolpopexy. Use of a soft polypropylene mesh rather than an older type 3 or 4 mesh also decreases mesh complications. Patients with prior abdominal surgeries and bowel adhesions may be at higher risk for conversion to laparotomy; however, most can be safely accomplished using minimally invasive techniques.

Patients do not need to undergo special preoperative preparation, including mechanical bowel preparation prior to laparoscopic surgery, as randomized trials have shown no benefits. Entry to the abdominal/pelvic cavity can be safely accomplished via the umbilicus using closed or open techniques based on surgeon comfort and/or preference. A 5 mm trocar is placed in the umbilicus; two additional 5 mm ports are placed on the patient's left (for sewing), and an 8 mm accessory port (to pass suture) on the patient's right. Maximum Trendelenberg allows the bowels to fall out of the pelvis for exposure to the pre-sacral space and pelvis.

Pre-sacral dissection is done first using monopolar energy to provide exposure to the anterior longitudinal ligament just below the promontory. After the anterior and posterior peritoneum are sharply dissected from the vagina (to the rectal reflection posteriorly and just above trigone anteriorly), two strips or a "Y" shaped soft polypropylene mesh is sewn to the anterior and posterior vagina. This technique typically results in excellent support of the anterior and posterior vaginal walls as well as the apex and reduces need for any concomitant anterior or posterior vaginal wall support procedures.

To facilitate needle placement and positioning, needles can be loaded on a curved laparoscopic needle driver and placed through the 8 mm port, so then primary surgeon can receive the needle in the pelvis with the needle positioned appropriately. This technique decreases the

time required for less experienced surgeons to 'right' the needle while intraperitoneal. A closed knot pusher is also threaded through the suture to facilitate intracorporeal knot tying.

A Lucite stent placed in the vagina also provides exposure and counter-traction to facilitate suturing.

The free ends/end of the mesh are then sewn to the anterior longitudinal ligament just below the sacral promontory. In the majority of women, the intervertebral disc is located at the promontory, so all sutures should be placed inferior to promontory in S1 to reduce risk of discitis.

Selecting the Ideal Operation for Prolapse: Balancing Risks and Benefits

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The goal of all quality of life surgery, including surgery for pelvic organ prolapse, is to optimize patient satisfaction, outcomes and quality of life while minimizing complications and recovery. The 'ideal' operation would be durable and optimize patient-centered outcomes with a short recovery and few complications. Increasing data suggest that outcomes that matter patients may differ from traditional physician centered measures of success. Patient satisfaction after reconstructive pelvic surgery correlates much more strongly with achievement of patients' self-described, pre-operative goals than objective measures of anatomic success. Similarly, patient dissatisfaction correlates strongly with feeling "unprepared" for surgery, perception of routine post-operative events as "complications" (eg: Foley catheter), and development of NEW symptoms. Patients should be carefully, and even 'over-counseled' about possible adverse events, especially long-lasting symptoms.

Keys factors in selecting the "best" operations for prolapse:

1. Determine which outcomes are meaningful to the patient.
2. Know individual woman's goals for surgery.
3. Know risks/benefits of different prolapse procedures to help "match" the procedure to the patient.

Tips and Tricks: How I do robotic sacrocolpopexy safely

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The increased durability of sacrocolpopexy (SCP) when compared to native tissue vaginal repair comes at the price of higher surgical morbidity. Appropriate patient selection, therefore, is paramount to minimizing complications of SCP. The reconstructive pelvic surgeon should always be mindful that prolapse is a quality of life condition that should not expose a woman to unnecessary surgical risk. In my experience, patients at both extremes of weight and those with prior intra-abdominal surgery pose a far greater risk than women of normal weight with a virgin abdomen.

Risks of robotic SCP can broadly be divided into 5 major categories: Nerve injury (related to patient positioning); Bowel injury (Abdominal entry, thermal injury, and rectal injury during dissection); Vascular injury (Abdominal entry; dissection and suturing at sacrum); Genitourinary tract injury (cystotomy, ureteral kinking) and Mesh erosion/exposure.

Using a strap across the chest instead of shoulder blocks and keeping the legs in low Allen stirrups minimize the risk of brachial plexus and femoral nerve injury. Before draping the patient, one should observe the patient in steep Trendelenburg position to ensure no slippage is occurring as this can create significant points of pressure on unpadded areas.

Abdominal entry is universally safest in the left upper quadrant at Palmer's point after the stomach is emptied with a nasogastric tube. I strongly advocate for the open Hassan technique in women with a low body-mass index to reduce the risk of vascular injury. Women with extensive abdominal surgery carry a far greater risk of small bowel injury on abdominal entry and this risk is not reduced when using the open versus Veress needle technique. If the small bowel is injured upon entry, the procedure does not have to be abandoned but full evaluation of the entire bowel is necessary to ensure no additional injury occurred.

Mechanical bowel preparation before SCP is not supported by medical evidence. Adhesiolysis is best performed without the use of monopolar cautery as this increases the risk of thermal injury. With the absence of haptic feedback with robotics, undue traction on the bowel can create injury as well. Use of an atraumatic bowel grasper in the 4th arm is helpful with sigmoid retraction. The risk of visceral injury is reduced when following the principle that "fat goes with organ." When dissecting the rectovaginal and vesicovaginal spaces, very careful attention to the fat planes will significantly reduce the risk of bladder and bowel injury. Fat should never be on the vaginal side of the dissection- if it is, you are too close to either the rectum or the bladder. In addition, if any bleeding is encountered in either of these spaces, then one is either too close to the vagina or the viscera. Judicious use of electrocautery in these spaces is advised. The use of vaginal manipulators is essential to assist with demarcation of the vaginal planes.

Sacral hemorrhage is avoided by creation of the retrorectal space, especially in obese women. This allows for easy visualization of the anterior longitudinal ligament. The peritoneum over the sacral promontory is elevated and opened with careful attention to avoid the left iliac vein that can be medially displaced in some women. Instead of trying to dissect down through a small window in the fat, one can dissect the retrorectal space and mobilize the sigmoid away from the sacrum, thereby exposing the promontory in a safe manner.

The sacral arm of the mesh should be sutured just below the “prominence” of the promontory to avoid the L5 disc space. Attachment of the mesh at S1 avoids the risk of hemorrhage from sacral veins. The use of Floseal for both arterial and venous bleeding at the sacrum is recommended. If the left iliac vein is injured, compression with a raytec sponge, introduced through an accessory port, can achieve hemostasis until vascular consultation is obtained.

Mesh complications can be minimized with the use of an ultra light-weight mesh and avoidance of braided, permanent suture for mesh attachment. If a cystotomy is sustained at the bladder base during dissection, I advocate against mesh placement at that site as this has been associated with subsequent mesh erosion into the bladder. If a large bowel or rectal injury is sustained, I would advocate against the use of mesh altogether. Closing the peritoneum over the mesh at the termination of the procedure may reduce the subsequent risk of small bowel obstruction.

Managing Visceral Injury: Bladder and Bowel

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Bladder and bowel injury may occur by one of three mechanisms – trocar passage, surgical dissection and thermal injury from cautery and these injuries may be recognized intra or postoperatively, sometimes recognized only after years. In the latter instance, it may be impossible to determine whether there was an injury at the time of surgery or a late mesh erosion. Treatment depends on both the timing (intra versus post op) and the mechanism of injury (trocar, dissection or thermal). No matter what the mechanism, for both intra and postoperative injuries, it is axiomatic that associated injuries to ureter, urethra and bowel be diagnosed with certainty. So, cystoscopy and retrograde pyelogram should be done whenever there even a slight suspicion of injury to the respective organs and, if a bowel injury is suspected or diagnosed, it is important to rule out injuries to adjacent structure and other parts of the bowel. When the complication was due to mesh; it is important to remove as much of the adjacent mesh as possible. However, excision of mesh can be very hazardous; it requires considerable expertise and judgment to weigh the risks and benefits.

The key to effective treatment is early diagnosis, but prevention based on sound surgical principles and an intimate knowledge of anatomy and the surgical technique is the best method of all. Whenever you think of the possibility of visceral injury, rule it out! Bladder and rectal injuries are fairly straightforward as described above and below, but thermal and trocar injuries are much more subtle; too often they are only discovered postoperatively, so be carefully and maintain a high degree of suspicion – the obvious signs of bilious or fecal drainage intraoperatively are rarely present.

- Intraoperative bladder injuries from trocar passage - Conventional wisdom holds that a small bladder penetration needs no treatment other than removing the trocar and passing it again. An indwelling catheter should be left in place postoperatively. However, if the perforation is in contact with the prolapse mesh or if it is larger than a small puncture, I believe that the mesh repair should be abandoned and a native tissue repair be considered.
- Intraoperative bladder injury from surgical dissection. When an injury occurs during vaginal surgery resulting in a hole in the bladder or urethra where mesh is to be placed, it should, at the least, be treated with postoperative bladder drainage with a catheter and the mesh surgery be abandoned. A native tissue repair can be done at the option of the surgeon. Whether or not to actually repair the bladder and urethra depends on the size and location of the injury, the proximity of the ureters and the expertise of the surgeon. In some instances, it is best to simply drain the bladder – particularly in injuries high up in the vagina above the ureteral orifice. Most of these will heal without incident. Of course, there is always the temptation to repair everything for fear of a fistula, but sometimes forbearance is best.

When the bladder is injured during open surgery, the same principles apply, but it is usually straightforward to accomplish a good closure unless it is very deep in the pelvis. Of course great care must be taken to exclude and/or manage ureteral injury

- Intraoperative rectal injury – Rectal injuries should always be repaired; I prefer two layer closure with delayed absorbable sutures being careful not to tie the knots so tight as to compromise the blood supply. Whenever rectal injury is suspected, it needs to be excluded if the diagnosis is not certain. In selected cases endoscopy with injection of air and the pelvis filled with fluid will show the tell tale findings of air bubbles that confirms the diagnosis.
- Intraoperative small and large bowel injuries – All these injuries need to be repaired using meticulous surgical principles. For thermal injuries, the bowel should be debrided with enough of a margin to insure a good blood supply. Whether or not do a bowel resection or simply oversee the injury depends on the look and feel of the tissue and the size of the hole. The most important surgical principles are to do a careful dissection and exploration ensuring that there are no other injuries and that the edges of the bowel come together very loosely, with no tension at all. Here, perfection is the enemy of the good. You want to achieve a tension free closure, but not tie the sutures so tight to impair the blood supply.

Pain and Dyspareunia: How to avoid during reconstructive pelvic surgery

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A “perfect” prolapse repair is meaningless if a woman cannot maintain normal vaginal function or if she suffers from a postoperative pain syndrome. While native tissue vaginal repairs are not immune to post-operative dyspareunia or pain, they are associated with significantly less pain than mesh-augmented repairs.

A careful pre-operative assessment will usually reveal those women with a predisposition to pain syndromes and this should be used to inform the surgeon as to the recommended procedure. I strongly recommend avoiding the use of vaginal mesh in women with a history of fibromyalgia, chronic migraines, pre-existing dyspareunia, chronic pelvic pain or bladder pain syndrome. In the event that you believe a woman with such a medical history might still benefit from the use of mesh, a more detailed informed consent process is likely warranted.

Pain and dyspareunia as a consequence of reconstructive pelvic surgery likely derive from 5 sources: 1) Creation of vaginal contraction rings/bands 2) Vaginal tethering or shortening 3) Plication of the levator ani muscles 4) Nerve entrapment and 5) Fibrosis/scarring/inflammation, usually associated with mesh implant.

Vaginal contraction rings and bands typically result from aggressive plication and excessive trimming of vaginal epithelium. During surgery, frequent digital assessments of vaginal caliber can ensure that the vaginal canal permits at least 2 fingerbreadths along the entire vagina. If mesh is placed under tension, similar contraction bands can result and “plucking” of these bands can reproduce pain. Surgical release of these areas of tension is frequently required, in addition to aggressive pelvic floor physical therapy.

Vaginal tethering or shortening is again a consequence of inappropriate apical support and repetitive attempts at vaginal repair. The iliococcygeus muscle, used for many of the vaginal mesh procedures, provides inadequate vaginal length and should be avoided in sexually active women. At least 9 cm of vagina is necessary to reach the sacrospinous ligament without tension and therefore, this ligament should not be used in women with a starting total vaginal length of less than 9 cm. Sacrocolpopexy is the procedure most likely to preserve vaginal length and should be considered in sexually active women with vaginal vault prolapse.

The pudendal and sciatic nerve lie in close proximity to the sacrospinous ligament. Nerve injury can be avoided by suturing at least 2 fingerbreadths medial to the ischial spine. Self-retrieving needle devices can also limit the depth of the needle bite and therefore reduce the risk of traversing the ligament and entrapping the deeper sciatic nerve. Any woman who complains of severe buttock pain and is unable to walk on post-operative day 1 should have the sacrospinous stitch removed. Similarly, when performing a high uterosacral ligament suspension, the sacral nerve roots can be entrapped, particularly in thin women. A cadaver study has demonstrated a lower risk of nerve injury when the uterosacral ligament is elevated with an Allis clamp prior to

suture placement. Early removal of the higher uterosacral stitch will eliminate severe buttock pain following this procedure.

Posterior repair is associated with rates of dyspareunia of 15-20% and are highest when the levator ani muscles are plicated. Over-correction of the introitus, with incorrect suturing of the labia minora in the midline, is another common complication of posterior repair. In these cases, surgical revision is recommended instead of sequential vaginal dilation.

Insertion of vaginal mesh grafts may result in pain syndromes even when no anatomic deformity is appreciated on physical examination. It is possible that tissue fibrosis and inflammation as a consequence of the implant could elicit a pain response. Mesh removal may not result in pain alleviation. I have found that multidisciplinary pain management consisting of pelvic floor physical therapy, central neuromodulation, vaginal estrogen and trigger point injections is usually necessary.

Selecting the Ideal Operation for Prolapse: Balancing Risks and Benefits

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Medico-legal issues: Keeping the lawyers out of your operating room.

Dr Stephen Jeffery

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Pelvic organ prolapse (POP) is a quality of life issue. As surgeons, it is essential that we avoid exchanging one set of quality of life problems for another. The complications and litigious environment associated with the use of mesh are an extreme, but very important example of lawyers invading our operating rooms. Receiving a letter from a patient's lawyer is certainly one of the greatest fears of any surgeon. There are a number of strategies that will reduce the risk of litigation following surgery for POP.

One of the first steps in avoiding litigation is to ensure adequate competence in performing the surgical procedure. There is no replacement for supervised training followed by adequate surgical volumes of the technique. High volume pelvic floor surgeons have been shown to have a lower number of surgical complications and will have better competence in managing a problem if it develops. Surgery for POP is never an emergency and one of the best ways to avoid litigation may be to refer the patient to a more competent surgeon or to ask for expert assistance in the case. Documentation demonstrating adequate training and self-audit showing satisfactory outcomes are also excellent tools for the defense of a surgeon who has been sued.

Adequate pre-operative counseling is arguably the most important part of litigation-prophylaxis. In selecting a procedure for POP in a specific patient, there are often a number of options. In this shared decision making process, the surgeon should observe a number of important principles. The surgeon should first ascertain the patient's insight and attitude towards treatment before engaging in a discussion on surgical management options. This should be followed by adequate exchange of information regarding the available options. The use of decision aids has been shown to significantly increase patient understanding and a number of excellent options are available, including Apps for use on I pads and smartphones. This should be followed by a frank and detailed discussion on all the available options and their individual success and complication rates. Studies have shown that patients are more likely to assimilate a combination of statistical data. For example, when describing success rates rather inform the patient of both a 95% success rate and 5% failure rate. This discussion should be documented in detail and preferably signed by the patient.

A disappointed patient is more likely to sue her surgeon and an important aspect of litigation-prophylaxis is therefore expectation management. Surgeons should always bear the following formula in mind:

$$\text{Disappointment} = \frac{\text{Expectation}}{\text{Reality}}$$

The risk of litigation is also related to the management of the case following the development of an adverse event. When a prolapse procedure does not go as planned, adhering to the following principles will minimize the risk of litigation: Engage with the patient on a factual, timeous and detailed explanation of the complication. This should be

followed by a frank and detailed discussion on the consequences of the complication. Explain the future management plan. If referring the patient for treatment to another physician, maintain close contact with her and assure her of your ongoing support and concern. It is also essential that the surgeon acknowledge the patient's problem and ongoing suffering due to the complication.

A number of complications that may lead to successful litigation in prolapse surgery include:

- Failure to recognise bowel or bladder injury at laparoscopic sacrocolpopexy.
- New pain syndromes following all types of prolapse surgery. If a mesh product was used this may be more difficult to defend.
- Development of a vesico or rectovaginal fistula.
- Unrecognised ureteric injury.
- Unrecognised bladder injury during vaginal mesh insertion