REVIEW

Combined stress urinary incontinence surgery at the time of prolapse surgery – is it justified?

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Objectives. To review the current literature in order to formulate an evidence-based approach to the problem of preventing stress urinary incontinence (SUI) following prolapse surgery.

Design. We reviewed the current English language literature available on PubMed (Medline), as well as current relevant textbooks in print.

Results. It appears that a prophylactic anti-incontinence procedure is justified in patients with pre-operative SUI, as well as in those with a positive stress test at reduction. In patients with no pre-operative evidence of occult SUI, management is still controversial.

Conclusions. Further research is needed, specifically with regard to standardisation of the stress test, the place of suburethral slings and the role of pelvic floor ultrasound.

Stress urinary incontinence (SUI) following surgery for urogenital prolapse remains a problem. Prolapse and SUI commonly co-exist. However, in patients with advanced prolapse, symptomatic SUI is rare owing to the obstructive effect of the prolapsed organ and/or urethral kinking. Terms used in the literature to describe this condition include occult, potential, masked, latent, hidden, iatrogenic or *de novo* SUI.

Patients regard the development or persistence of SUI after prolapse surgery as failed surgery. The estimated risk of SUI after prolapse surgery varies between 11%[1] and 22%.[2] In the past, some advocated routine prophylactic SUI surgery at the time of prolapse surgery; however, the risks of this prophylactic surgery should also be brought into the equation. These risks include irritative symptoms, voiding disorders, and injuries to the urinary tract, bowel, nerves and vascular structures.

At present there are three options for the treatment of occult SUI: (*i*) empiric combined prolapse and SUI surgery; (*ii*) a selective policy with the demonstration of hidden SUI pre-operatively; and (*iii*) a two-step approach.

It must be kept in mind that certain prolapse procedures, such as sacrospinous ligament fixation and colpocleisis, have a particularly high risk of postoperative occult SUI.

Diagnosis of occult SUI

Patients with a history of previous SUI, which has improved with progressive prolapse, are at increased risk of developing *de novo* SUI. Despite its limitations, clinical examination is currently still the best method of diagnosing occult SUI. The prolapsed organ is reduced and the patient is observed for urinary leakage on exertion. This is the so-called 'stress test'. It is important to perform this reduction test at a bladder volume of about 300 ml. Reduction can be performed by manual reduction or with a pessary, Sims speculum, cotton swab, vaginal packing or ring forceps. Each of these methods has a different detection rate. Visco *et al*. showed in a prospective randomised trial that a large cotton swab had the best detection rate for occult SUI.[3] There is, however, still no standardised method of reduction for stress testing. The result of a reduction stress test is also not always comparable to the anatomical result achieved with surgery. The sensitivity of the stress test has been shown to range between 5% and 38% and the specificity between 74% and 96%.[3]

Other tests, including urodynamic parameters, the Q-tip test and the urethrocystogram, have not been shown to be good detectors of occult SUI. The value of urodynamics remains controversial. The CARE study showed that urodynamic testing was not useful in predicting postoperative SUI.[2]

In our unit, however, we routinely perform pre-operative urodynamics. We find it useful in diagnosing patients with overactive bladder, voiding disorders and significant residuals and those with occult SUI. We are of the opinion that it is helpful in counselling patients and that it may have value in avoiding litigation.

Pelvic floor ultrasound has recently come to the fore.[4] Bladder neck hypermobility has been shown to correlate with SUI, but specific reference values have not yet been agreed upon. Funnelling of the internal urethral meatus appears to be to nonspecific. Colour Doppler can be used to identify leakage of small amounts of urine on valsalva. We could not find any literature evaluating the role of pelvic floor ultrasound after reduction of prolapse. The predictive value of pelvic floor ultrasound in the management of patients with occult SUI still needs to be clarified.

SUI prevention at the time of abdominal prolapse surgery

Only two randomised controlled trials address this issue (Table I). The CARE study[5] was a multicentre study involving 157 patients randomised to a prophylactic Burch colposuspension at sacrocolpopexy, with 165 women serving as controls. In the intervention group, 23.8% developed SUI, compared with 44.1% of the control group. The authors concluded that an additional Burch colposuspension at the time of abdominal sacrocolpopexy significantly reduced the risk of SUI.

In contrast, a smaller study, by Constantini *et al.*[6] had contradictory results. In this monocentric study, 34 patients underwent a prophylactic Burch colposuspension and 32 in the control group only had a sacrocolpopexy. They limited their study to a select group of patients who had a negative stress test before and after reduction, no leakage on urodynamic testing and no symptoms of urinary incontinence. Surprisingly, 26.4% in the intervention

Table I. Randomised controlled trials addressing SUI prevention at the time of prolapse surgery (adapted from Fatton[7])

Author, year and surgery	Study level of evidence	Anti-incontinence procedure	Patient characteristics (*N*)	Follow-up	Postoperative SUI (*N*)	Comments and other results (*N*)
Brubaker *et al.*, 2006,[6] ASCP	Multicentric prospective randomised, level 1	Burch group *N*=157	Subjective SUI 19.7% (30) Positive stress test without reduction 2% (3), with POP reduction 35.7% (55) Detrusor overactivity 12.1% (19)	3 mo. (and 1 yr)	Global 23.8% (35) According to symptoms 19% (29) According to stress testing 7% (7) (After 1 yr 25%)	Urge outcome 32.7% (50) Serious adverse events 14.6% (23)
		Control group *N*=165	Subjective SUI 18.8% (30) Positive stress test without reduction 5.7% (9), with POP reduction 35.8% (58) Detrusor overactivity 10.4% (17)	3 mo. (and 1 yr)	Global 44.1% (67) According to symptoms 39.7% (60) According to stress testing 8.6% (14) (After 1 yr 40.1%)	Urge outcome 38.4% (58) Serious adverse events 14.5% (24)
Constantini *et al.*,2007,[6] ACSP	Monocentric prospective randomised, level 2	Burch group *N*=34	Negative stress test before and after reduction No symptoms of UI (history, questionnaire) No leakage during UDS	42 (SD 18) mo. (range 12 - 74)	*De novo* SUI 26.4%	
		Control group *N*=32		38 (SD 19) mo. (range 15 - 71)	*De novo* SUI 3.1%	

ASCP = open abdominal sacrocolpopexy; SUI = stress urinary incontinence; POP = pelvic organ prolapse; UI = urinary incontinence; UDS = urodynamic studies; SD = standard deviation.

group developed SUI, compared with 3.1% in the control group.

When reading the CARE study in another way, 56% of the patients who were continent pre-operatively were still dry postoperatively in the no-intervention arm, and 24% of the pre-operatively continent patients in the Burch group became incontinent postoperatively.[7]

In the current literature, there were no randomised controlled trials evaluating the role of suburethral slings at the time of abdominal prolapse surgery. Slings may be a more reproducible anti-incontinence procedure and may give us clearer results. We propose that a future randomised controlled trial should be considered in order to clarify this issue.

SUI surgery at the time of vaginal prolapse surgery

There are currently no randomised controlled studies that have evaluated the role of SUI surgery at the time of vaginal prolapse surgery. The role of prophylactic suburethral sling procedures at the time of vaginal prolapse surgery is therefore still an important unanswered question. A prospective study by Hiltunen *et al*.[8] has shown that there is an increased association between anterior mesh repairs and SUI.

Intra-operative evaluation for occult SUI

The intra-operative cough test has not been widely adopted. It needs the co-operation of the patient and regional anaesthesia. The sensitivity of this test is controversial.

The intra-operative use of pelvic floor ultrasound has also not yet been assessed in the literature. Potential roles of this investigation include evaluation of bladder neck hypermobility after prolapse surgery, evaluation of the degree of bladder neck evaluation after Burch colposuspension to predict a voiding disorder, and evaluation of suburethral tape placement.

Which anti-incontinence procedure?

The Burch colposuspension is being superseded by the non-tension vaginal polypropylene suburethral sling procedure (TVT). The suburethral sling offers the advantages of a minimally invasive procedure with relatively low morbidity. It is also important to keep in mind that when sacrocolpopexy is combined with a colposuspension, vault and posterior vaginal wall prolapse are more likely to occur.[7]

Informed consent

Patients should be properly informed before prolapse surgery. They should also be informed regarding the risk of de novo SUI, as well as the complications of a prophylactic SUI procedure. It should also be kept in mind that up 20% of patients are still incontinent, to some degree, after a prophylactic colposuspension. This figure decreases to 10% in the case of a TVT procedure.[9]

Conclusions

At this stage of the controversy, it is acceptable to do an additional anti-incontinence procedure at the time of pelvic organ prolapse surgery in patients who are incontinent or have a positive stress test. In continent patients with a negative stress test, the debate is still open. The risk-benefit ratio must be rigorously estimated in these patients.

We feel that overall the literature does not support empiric combined prolapse and SUI surgery. This approach may, in fact, result in unnecessary complications.

We consider that further research is needed in the following areas: standardisation of the stress test, the role of suburethral slings to prevent de novo SUI, and pelvic floor ultrasound in prolapse surgery.

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