

It is important to assess fully to ascertain that incontinence is truly stress incontinence rather than detrusor instability: the former can be improved with surgery whereas the latter cannot.

It is somewhat difficult to fully assess the success of any particular surgical technique, as pressure flow data in normal women is scarce, so that one can only make before- and after-comparisons of patients.

Iatrogenic incontinence may actually arise following anti-incontinence surgery.

1. **SNS: Sacral nerve stimulation:** placement of a temporary stimulation unit (termed the percutaneous nerve evaluation PNE) is used as a trial procedure to ascertain the potential benefit from implantation of a permanent unit.

The aim is to stimulate the sacral nerves thereby improving the nerve input into the spinal cord and inhibiting the hyperactivity of the bladder.

Not only does the SNS relieve symptoms of the overactive bladder, it is also successful in improving urination in patients with urinary retention of unknown cause (idiopathic).

Idiopathic urinary retention is thought to come about through overactivity of the guarding reflexes, spasticity of the pelvic floor muscles and sphincter dyssynergia.

SNS allows pelvic floor relaxation and subsequent ability to initiate urination. The procedure is minimally invasive, easy to perform, reversible and associated with fewer adverse effects than other surgical treatments.

If it fails to work, it is unlikely to cause permanent damage and does not prevent other forms of treatment being undertaken. It is recommended for patients with intractable urgency and urge incontinence that has failed to respond to other therapy.

2. Older techniques such as *denervation* (rendering the nerve 'dead') *myomectomy* (removing part of the bladder muscle), diversion (sending the urine out into a bag for example) and *rhizotomy* (nerve root ablation) are no longer considered to be viable treatments for the overactive bladder.

Often when bladder muscle instability was relieved, normal contractions were no longer possible so that normal function was also sacrificed.

Subsequently, bladder emptying requires abdominal straining or intermittent self-catheterisation. Abdominal straining may result in day and nighttime frequency and stress incontinence.

Before irreversible surgery is undertaken, patients need to be made aware that there may be a need for permanent intermittent self-catheterisation.

3. **Surgical correction of stress incontinence:** the aim is to provide a 'sling' which supports the pelvic floor in such a way that the neck of the bladder is held in the normal anatomical position and thus prevents leakage on coughing/straining etc.

Various materials have been used to create this sling. Fascia (a sheath like material found in parts of the body) from the patient may be used or allogeneic material (foreign to the body): the latter works by the body's inflammatory reaction to foreign tissue which results in scar formation.

However, this is not as inherently strong as a sling of fascia from the patient. This technique has also been used to treat urge incontinence, with one study showing 41% of cases in which the problems were resolved.

The technique was successful in 84% of patients with stress incontinence, whose symptoms were either partially or completely relieved.

Complication of the slings: it is a difficult judgement that the urologist needs to make, in determining how tightly to secure the sling: if it is too tight, the patient will be unable to void.

Note that one important side effect of this type of pelvic surgery is temporary loss of vaginal sensation (most cases resolve within a year post-op.)

4. **Major bladder surgery:** for the most severe cases, in the past, an indwelling suprapubic catheter has been surgically inserted into the bladder through the lower abdomen.(just above the pubic symphysis).

However, it is now recognised that permanent indwelling latex catheters carry a risk of bladder stones and even bladder cancer.

Nowadays, a technique known as an ***ileovesicostomy***, in which the bladder drains out through the small bowel, is used instead.