scopy should be performed routinely after mesh placement to identify potential visceral injury.

13. Macroporous monofilament, low weighted polypropylene mesh should be chosen.

Management of Mesh Complications

Voiding difficulty

The incidence of voiding difficulty after mid urethral sling operation is 2.8-8%. This is relatively lower compared to other anti-incontinence surgeries such as colposuspension or pubovaginal sling operation. To solve this problem, non surgical or surgical treatment modalities can be used. Non surgical management include waiting with clean intermittent catheterization, medication (obstructive-diazepam, baclofen, alpha blocker, irritative- anticholinergics), physical therapy for pelvic floor control, urethral dilation and downward traction. Surgical management is tape incision or release and formal urethrolysis. In most cases, obstruction can be effectively treated with tape manipulation with incision or release. The success rate of tape incision or release was 81-100% in obstructive symptom, 57-88% in irritative symptom and recurred SUI appeared 0-40%. Under rare circumstances, when simple tape incision does not sufficiently alleviate the obstructive symptom, complete transvaginal urethrolysis with lateral dissection and perforation of endopelvic fascia is required to achieve satisfactory vesicourethral mobility.

The timing of tape incision or urethrolysis has been commonly recommended at minimum 3 months after operation but the reports advocating earlier operation is growing. During sling revision, concomitant mid urethral sling operation has not been recommended.

In summary, both obstructive & irritative symptoms due to urethral obstruction after mid urethral sling operation are well controlled by simple tape incision or urethrolysis and the incidence of recurred SUI after sling revision is acceptable.

Mesh erosion with or without infection

Mesh or graft erosion is one of the most common postoperative complication and not always combined with infection and pain. The simple exposition can be differentiated from infection or foreign-body rejection by simple pulling on the mesh. In the former, tissue ingrowth is strong and the mesh is attached and in the latter, the mesh is loose without tissue attachment on a part or the whole surface. If the mesh is loose, it must be totally removed or, at least, trimmed as far as possible, up to a part with strong tissue ingrowth.

Treatment options consist of use with antibiotics and estrogen cream, partial simple excision and removal of the maximum amount of mesh or graft. If the patient is asymptomatic, not sexually active, and the erosion is small (<1 cm) we initially advocate the use of vaginal estrogen. We will typically use 1 g of vaginal estrogen at night for 2 weeks and then 3 times weekly. If the erosion persists until 3 months after estrogen use we proceed to partial simple excision. Partial simple excision is mostly done in case of a limited vaginal exposure with mild symptoms. The exposure site is circumcised and the edges of the vaginal epithelium are mobilized approximately 1 cm around the exposure. The extruded part of the mesh is then removed and the edges of the vaginal epithelium trimmed and reapproximated.

In cases where partial mesh excision has failed, when the exposure area is large, when infection, foreign body rejection, abscess, fistula, or chronic pain is present and when mesh erosion involving bladder or rectum is found, removal of the majority of the mesh is considered. If the mesh was originally placed from a completely transvaginal approach, then it may be possible to remove the mesh in its entirety. If trocars were used to place the mesh, as is the case with many commercially available mesh kits, it is often not possible to remove the arms of the mesh because they pass through the ischiorectal fossa and/or obturator space. In these cases, we advocate removal of as much of the mesh as possible through a vaginal approach while leaving the mesh arms in place.

The possibility of recurrence of POP after excision of mesh was more common with complete or maximal excision than with partial excision. If it is possible, partial excision should be preferred in most cases of mesh exposure with relatively mild symptoms.

Symposium 3 - Translational Researches on Lower Urinary Tract

New Aspects in Immunological Mechanisms of Bladder Pain Syndrome/ Interstitial Cystitis

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Objectives: Upon completion of this session, attendees will be presented with: up-to-date information regarding investigational approaches, mechanistic concepts and therapeutic options about the immunological mechanisms of bladder pain syndrome/interstitial cystitis (BPS/IC).

Overall Presentation: BPS/IC is a chronically progressive syndrome affecting the urinary bladder and is associated with symptoms of urgency, frequency and pain. This lecture will cover the current knowledge regarding peripheral targets and mechanisms underlying BPS/IC as well as therapeutic strategies. I will present evidence supporting a possible involvement of immune reactivity and the mechanisms that may be involved in triggering symptoms in patients diagnosed with BPS/IC. Urothelial cells have been demonstrated to release an array of signaling factors in response to mechanical and chemical stimuli. The targets for these signaling factors are thought to include afferent nerve terminals and lamina propria interstitial cells, suggesting that the urothelium may be involved in regulating bladder activity and sensory function. As no one pathological process has been identified in every patient with BPS/IC, a better understanding of possible mechanisms will increase opportunities for the development of new therapeutics targets for the treatment of this disorder.

The pathology of BPS/IC has been linked with a number of findings including an epithelial deficiency (alterations in the glycosaminoglycans layer), increased mast cell number and activity and/or increased expression of angiogenic and neuroendocrine factors. While there is no evidence for a direct causal role for autoimmune reactivity, there is increasing support for an involvement of the immune system in this disorder. In this regard, a number of clinical associations have been reported between BPS/IC and other autoimmune diseases such as lupus erythematosis, rheumatoid arthritis and ulcerative colitis. In addition, recent reports have also linked stress responses (which also increase incidence of symptoms in PBS/IC patients) and increased reactivity of the immune system. Both "defensive" agents (such as chondroitin sulfate, heparinoids and/or pentosan polysulfate-used against bladder symptoms) as well as "offensive" symptoms and factors (chronic inflammation, substances in urine) will be discussed. In addition, there is also evidence for auto-antibodies (which can affect a number of receptors/ion channels at various sites within the bladder wall) in patients with BPS/IC and other known autoimmune diseases. Narrow Band Imaging (NBI) and Neurometer could play an important role in clarifying the immunological condition of urinary bladder.

Take Home Message: Immunological reactivity may be an important component in the pathogenesis of BPS/IC, exhibiting different stages of host defense mechanisms depending upon the degree of various pathogenic factors in the bladder. The net result is a hypersensitivity of the urinary bladder to physical and chemical stimulation.

Luncheon Symposium

Male Lower Urinary Tract Symptoms and Adrenergic Receptor Mechanisms

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Male lower urinary tract symptoms (LUTS) related to benign prostatic hyperplasia (BPH) are commonly seen and consist of both storage (irritative) and voiding (obstructive) symptoms. α_1-adrenergic receptor blocking agents have often been used as a first choice of therapy of BPH-related male LUTS. As the major subtype of α_1-adrenergic receptors in the prostate, urethra and bladder neck is the α_{1A}-type, α_{1A}-selective adrenergic receptor antagonists such as silodosin have recently been shown to be effective for reducing LUTS in male patients with BPH. In the clinical studies using α_1-blockers, not only voiding symptoms, but also storage symptoms are reduced in male LUTS patients. The etiology of storage symptoms of LUTS, which are overlapped with overactive bladder (OAB) symptoms, would be multifactorial, and may include increased myogenic activity of the hypertrophied detrusor muscle, sensitization of afferent nerves from the prostate and the bladder, or others. Based on the findings in animal studies, α_1-blockers including silodosin can suppress afferent activity originating from the urethra and the bladder. Another potential site of action of α_1-blockers might be in the central nervous system, especially in the spinal cord, since there is evidence that the spinal descending adrenergic system originating from the brain stem has facilitately effects on the micturition reflex and that α_1-blockers including silodosin applied to the spinal cord can suppress bladder overactivity in animal models of OAB. Therefore, these afferent and CNF effects of α_1-blockers could also contribute to the improvement of storage symptoms of male LUTS in addition to the relaxing effects on prostatic and urethral smooth muscle, which reduce voiding symptoms of LUTS. Thus, in this lecture, I will discuss potential mechanisms of adrenergic receptors and α_1-blockers for the treatment of male LUTS related BPH.