

W17: Intrinsic Sphincteric Deficiency, Diagnosis and Management

Workshop Chair: Sherif Mourad, Egypt

20 October 2014 14:00 - 18:00

Start	End	Topic	Speakers
14:00	14:05	Introduction	• Sherif Mourad
14:05	14:20	Pathophysiology of ISD	• Patrick Woodman
14:20	14:35	Diagnostic Measures	• Ervin Kocjancic
14:35	14:50	Urodynamics for ISD	• Sherif Mourad
14:50	15:05	Conservative Management	• Maura Seleme
15:05	15:20	The Integral Theory Approach for ISD	• Paulo Palma
15:20	15:30	Discussion	All
15:30	16:00	Break	None
16:00	16:15	Injectable Bulking Agents	• Sherif Mourad
16:15	16:30	Inflatable Balloons & AUS	• Ervin Kocjancic
16:30	16:45	Slings for Female ISD	• Patrick Woodman
16:45	17:00	Slings Male ISD	• Paulo Palma
17:00	17:15	Discussion	All
17:15	17:30	Functional Training	• Maura Seleme
17:30	18:00	Hands on Training	All

Aims of course/workshop

The aims and objectives are:

giving a broad review of the diagnostic tools and measures to help identifying Intrinsic Sphincteric Deficiency and to evaluate the degree of sphincteric weakness. The audience will be able to understand better how to decide upon the suitable mode of treatment for such cases according to the aetiology and whether there is a concomitant lesion or not.

Bulking Agents in Intrinsic Sphincteric Deficiency

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President of Pan Arab Continence Society

Urinary incontinence following radical prostatectomy has a reported incidence of 5 to 12% [1]. Post-prostatectomy incontinence and other forms of male urinary incontinence have a significantly negative impact on Quality of Life. Urethral incompetence usually requires interventional therapy. Treatment of ISD in men after radical prostatectomy is a technically challenging procedure.

Surgical augmentation of intraurethral pressure includes slings and implants, such as artificial sphincters or periurethral bulking agents. The latter involves injection of a bulking agent at the area of the bladder neck and proximal urethra to enhance urethral resistance to urine flow by approximating the urethral mucosa.

The artificial urinary sphincter is a known effective solution in managing ISD. However, it carries the risk of disturbed bladder compliance and function to a degree that may affect the upper urinary tract. Moreover, there is the possibility of urethral erosion, especially in patients with a history of difficult pelvic operation and/or significant blood loss.

Complications such as infections and mechanical problems, requiring revisions are additional disadvantages. The sling operation is proving to be technically difficult in males, especially after radical pelvic surgery. Extensive fibrosis associated with male incontinence after surgery or trauma, and pelvic irradiation after radical prostatectomy further complicates the procedure, therefore, it is rarely performed.

Alternatively, injection or placement of a bulking agent has the advantages of being easily performed as an outpatient procedure because of the use of local anesthesia and a low complication rate, which makes it suitable especially in the elderly incontinent population.

Stress Urinary Incontinence (SUI), which is the involuntary loss of urine during stressful activities, develops in 10 to 30% of women of all ages [2]. In women, two types of sphincter abnormality are diagnosed,

bladder neck hypermobility and Intrinsic Sphincter Deficiency (ISD).

ISD may account for a higher failure rate of surgical procedures performed to treat Stress Urinary Incontinence (SUI) due to ISD.

Historically, slings have been the procedure of choice, however this procedure may increase and/or produce a significant incidence of urinary retention. Peri-urethral or trans-urethral bulking agents, which are less invasive, have been used to treat ISD for many years and avoid recurrent surgical procedures. Bulking agents are able to coapt the urethral mucosa and as a consequence produce higher resistance to increased abdominal pressure.

Injection of bulking agents into the urethral wall has been attempted with a variety of substances. The materials used to date have a wide range of success rates. The following are the so far studied agents:

Resorbable

Animal Origin - Bovine Glutaraldehyde Cross Linked Collagen

Human Origin - Fat

Chondrocytes (cell cultured, Reprogenesis Inc.)

Non-resorbable

Polytetrafluoroethylene (Teflon)

Silicone microimplants (Macroplastique)

Carbon particles (Durasphere)

Dextranomer and stabilized Hyaluronic acid (Zuidex)

Polyacrilamide Hydrogel (Aquamid)

Ethylene Vinyl Alcohol in Dimethyl Sulfoxide (Tegress)

Inflatable Silicon Balloons (ACT & ProACT)

Good results were reported with the use of polytetrafluoroethylene (PTFE) in the 1960s and 1970s [3]. PTFE (Teflon) paste consists of particles that vary in size from 1 to 100 μm , with 90% smaller than 40 μm , resulting in distant migration and granuloma formation [4]. The long-term results have been disappointing, Kiilholma and Mäkinen reported that only 18% of patients were continent 5 years after polytetrafluoroethylene injection [5].

Collagen (Contigen) is expensive and may cause allergic reactions in around 3% of patients. In most studies incontinence returned gradually with a median continence duration of 23 months [6]. Repeat injections are necessary to achieve sustained continence, which increases the cost.

The main disadvantages of using autologous fat relate to the variability of resorption as well as repeated injections. At 1-year follow-up only 28% of patients are cured with this therapy [7].

Numerous reports on PDMS for the treatment of female SUI have been published [8]. Encouraging results are reported in these studies, including 1 with over 5-year follow-up.

The Dextranomer is a type of sugar molecule that has been used for a number of years in the treatment of wounds. Hyaluronic acid is a naturally occurring substance produced by the body to firm tissues and lubricate joints. The hyaluronic acid used in ZUIDEX is synthetically produced. Neither of the ingredients in ZUIDEX gel is derived from animals, thus avoiding rejection risks that exist with animal-based products.

Aquamid is a Polyacrilamide hydrogel which is an atoxic, non-resorbable sterile watery gel. It is homogeneous, stable, not biodegradable, and has tissue-like viscosity and elasticity [9].

Tegress is Ethylene Vinyl Alcohol copolymer (EVOH) dissolved in Dimethyl Sulfoxide (DMSO) carrier. Upon injection, the DMSO carrier rapidly dissipates from the EVOH copolymer, forming a cohesive, spongy mass that serves to bulk surrounding tissue. Long term results are not available.

The ACT Device consists of two small implantable balloons. During a short procedure, the balloons are surgically placed under the skin next to the bladder. ACT Therapy has been used in more than 1,000 women in Europe, Canada and Australia. It is currently being studied in the United States in a Food and Drug Administration clinical study. Results of a previous study suggest that after a mean follow-up of 36 months, 62% of patients were dry and another 16% were much improved [10].

The use of bulking agents is a good, safe and effective alternative for the treatment of intrinsic sphincter deficiency in male and female patients. Although having lower efficacy than other surgical procedures, represent an alternative minimally invasive approach and may be particularly suited to those who have recurrent urodynamic stress incontinence following previous surgery.

References

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- 7- Blaivas JG, Heritz D, Santarosa RP, Dmochowski R, Ganabathi K, Roskamp D, Leach G: Periurethral fat injection for sphincteric incontinence in women. *J Urol* 1994;part 2,151: 419A, abstract 765
- 8- Koelbl H, Saz V, Doerfler D, Haeusler G, Sam C, Hanzal E: Transurethral injection of silicone microimplants for intrinsic urethral sphincter deficiency. *Obstet Gynecol* 1998;92:332
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The Integral Theory Approach to
Intrinsic sphincter deficiency

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Ligaments

Pubourethral ligament
Urethropeivic ligament

Anatomical basis: pubourethral ligaments

Zaccharin, Pereira

Anatomical basis: urethropeivic ligament

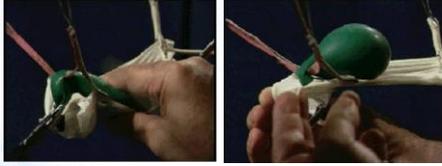
Como trabajan los músculos ?

Resting: 3 vectors en equilibrium voiding: post > anterior

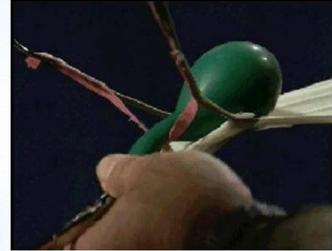
pubococcygeus
PC
Levator plato
mongitudinal ani
"Funnel"

Rest

Stress



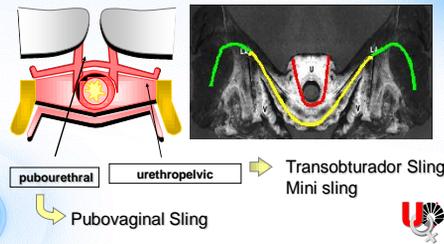
voiding



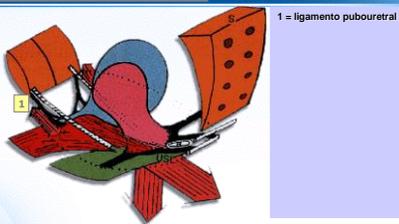
Virtual surgery: continence na active process



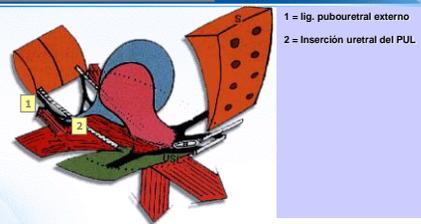
Ligaments reinforcement



Integral Theory



Integral Theory



Integral Theory

- 1 = Ligamento pubouretral
- 2 = Inserción del PUL

Integral Theory

- 1 = Ligamento pubouretral
- 2 =Inserción uretral LPU
- 3 = "Hammock"

Integral Theory

- 1 = Lig. pubouretral externo
- 2 = Inserción uretral de LPU
- 3 = "Hammock"

Integral Theory

- 1 = lig. pubouretral externo
- 2 = Inserción uretral de LPU
- 3 = "Hammock"
- 4 = Base Vesical

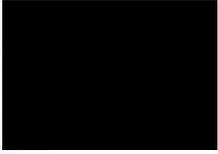
Integral Theory

- 1 = Lig. pubouretral externo
- 2 = Inserción uretral de LPU
- 3 = "Hammock"
- 4 = Base vesical
- 5 = Arco Tendineo

Integral Theory

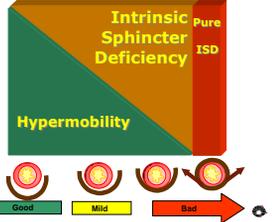
- 1 = Ligamento pubouretral
- 2 = Inserción uretral LPU
- 3 = "Hammock"
- 4 =Tendinous arc

Integral Theory



- 1 = Ligamento pubouretral
- 2 = Inserción uretral LPU
- 3 = "Hammock"
- 4 = Arco tendineo
- 5 = Uretr sacral ligaments

Good urethras & bad urethras



Urethral Quality: Good, Mid, Bad

Virtual surgery



Petros, Macmilan, 2007

Virtual surgery: SUI III



Methods

- 69 women with SUI were enrolled in the study. All underwent simulated operations, that consisted of four maneuvers during the physical examination.
- We compared the results of simulated operations with the value of PPE, Q-tip test and test pad.

Patients with positive Q-Tip test (> 30°) and ALPP> 90 cm H2O

non compressive support at midurethra	N	%
Leakage	1	7,7%
Dry	12	92,3%
Total	13	100%

PPE < 60cmH2O and Q-tip test < 30°.

The mean value of the pad test in this group was significant higher, 25.8 g (p<0.05)

	non compressive support	compressive support
leakage	6	0
Dry	0	6
Total	6	100%

Conclusions

- This study showed that simulated operations presented a very good correlation with Q-tip test along with ALPP.
- Simulated operations are simple and accurate for the identification of patients with ISD.