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SURGICAL CENTER
SWITZERLAND

5th Emirates International
UROLOGICAL
Conference

Peyronie's Disease : a tailored surgical procedure for every patient

by Carlo Bettocchi (MD, FECSM)

www.mhisc.ch

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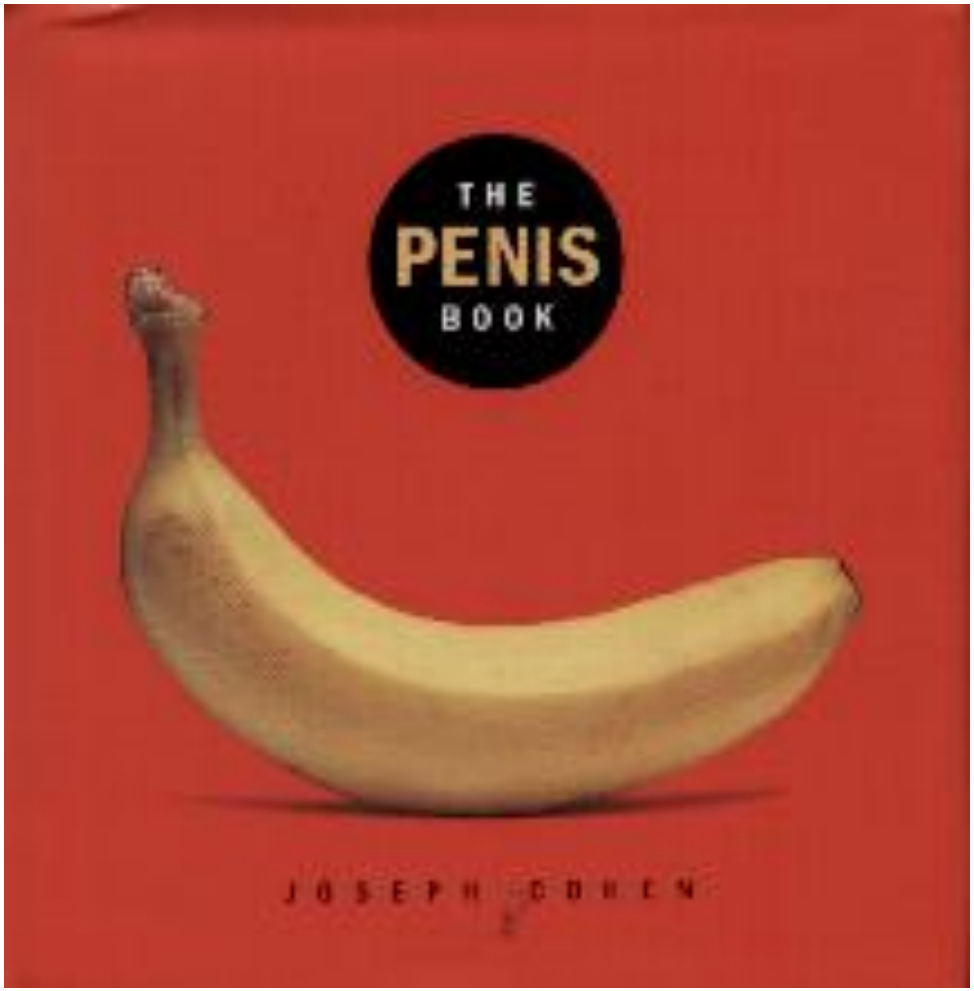
PEYRONIE'S

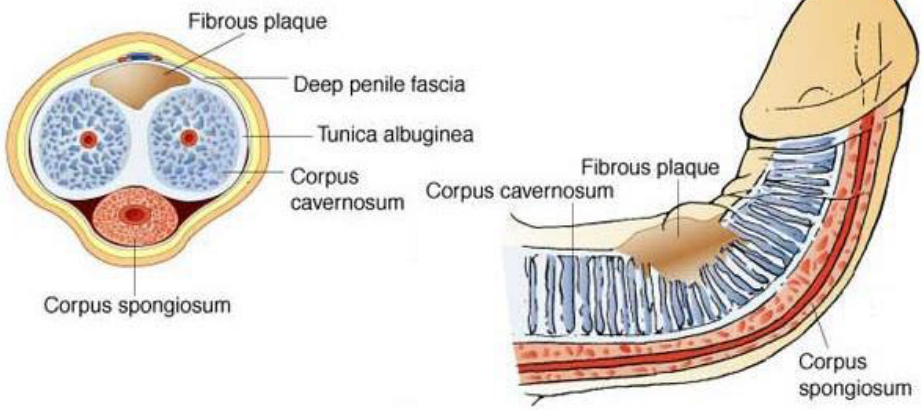


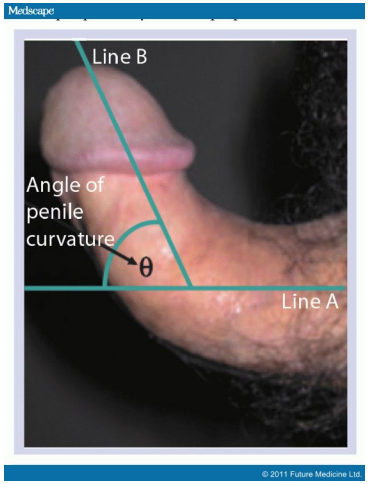
PEYRONIE'S

PEYRONIE'S

OVERVIEW

- Peyronie's disease is a connective tissue disorder, characterised by the formation of a fibrotic lesion or plaque in the tunica albuginea, which leads to penile deformity.
- Two phases of the disease can be distinguished:
    1. **Acute inflammatory phase** - painful erections, 'soft' nodule/plaque
    2. **Fibrotic/calcifying phase** - formation of hard palpable plaques (disease stabilisation)





- Spontaneous resolution is uncommon (3-13%) and most patients experience disease progression (30- 50%) or stabilisation (47-67%).
- Pain is usually present during the early stages of the disease but tends to resolve with time in 90% of men.

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INDICATIONS FOR PD SURGERY

- Deformity makes intercourse difficult / impossible
- Quality of erection not good (+/- PDE5)
- Disease present > 12m and stable > 3m

Patient expectation and informed consent important

PRIORITIES

1. Straight penis
2. Erectile function
3. Penile length

CAUSES OF ED IN PEYRONIE

- veno-occlusive dysfunction 83.9%
- arterial blood flow insuff.48.2%

PEYRONIE'S DISEASE SURGERY

OPTIONS

Good erection

↓

Corrective surgery

Poor erection

↓

Penile prosthesis implant

+/- corrective surgery

PD & good erection
Surgical Algorithm

(Levine and Lenting 1997, Mulhall et al 2005, Ralph et al 2006)

When rigidity adequate +/- pharmacotherapy

1) Tunica plication techniques

- Simple curve < 60 degrees
- No hourglass or hinge-effect

2) Incision/ Partial Excision and Grafting

- Complex curve >60 degrees
- Destabilizing hourglass or hinge

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Recommendation

Plication Procedures

There is no evidence that one surgical approach provides better outcomes over another, but curvature correction can be expected with low risk of new ED

Grade C

Ralph et al JSM 2010; 7

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Penile Straightening

Results of penile plication for Peyronie's Disease

Author	Year	Number	Satisfaction	Recurrent deform
Nooter	1994	33	64%	5%
Klevmark	1994	51	82%	5%
Klummerling	1995	54	89%	10%
Thiounn	1998	29	62%	20%
Schulteiss	2000	21	67%	43%
Chahal	2001	69	52%	14%
Gholami	2002	116	93%	15%
Cormio	2002	30	92%	-
Van der Drift	2002	31	58%	47%
Van der Horst	2004	28	57%	18%
Levine	2006	68	98%	1.5%

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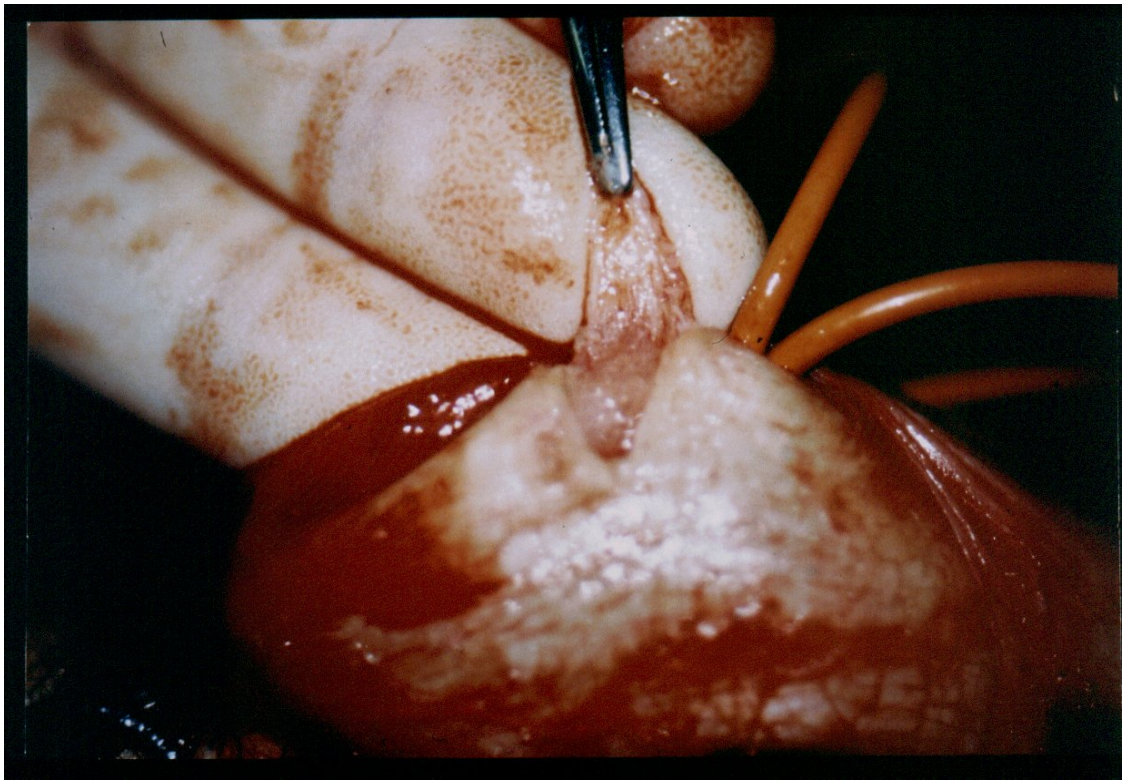
NESBIT PROCEDURE



Penile Straightening

Results of Nesbit for Peyronie's Disease

Author	Date of Publication	Patient #	Procedure Type	%Straight	%with ED	Shortening (%)	Mean Follow-up (Months)
Ralph	1995	359	Nesbit excision	91	3	100	21
Montague	1999	28	Modified Corporoplasty Yachia	89	4	Not reported	24.1
Rolle	2005	50	Nesbit Plication	100	0	Not reported	Not reported
Savoca	2004	218	Nesbit Plication	86.3	13	17	89
Syed	2003	50	Nesbit Plication	90	Not reported	50	84
Gholami	2002	132	16 dot plication technique	85	3	41	31
Taylor	2008	90	Tunica Albuginea Plication	93	12	18	72

85-100% 0-13% 17-100% 21-89 m

Incision & Grafting - Indications

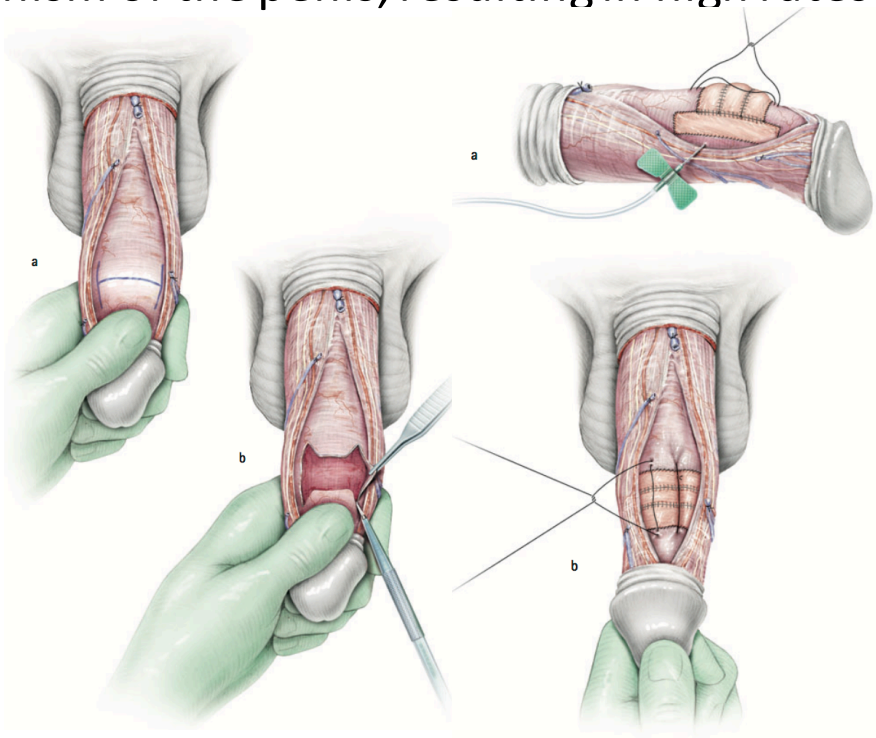
- Curvature > 60 degrees
- Significant shaft narrowing
- Hinge-effect present

- Must have good pre-op erections !!!

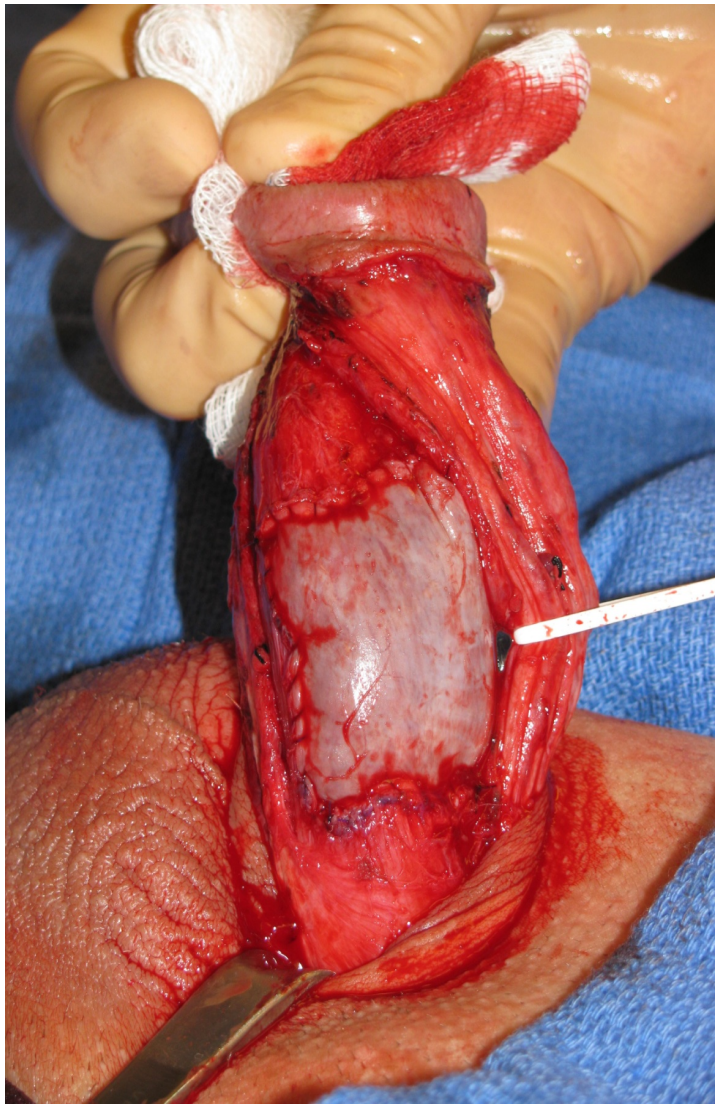
N.B. Plaque and deformity stable
& sexual activities compromised

GRAFT SURGERY

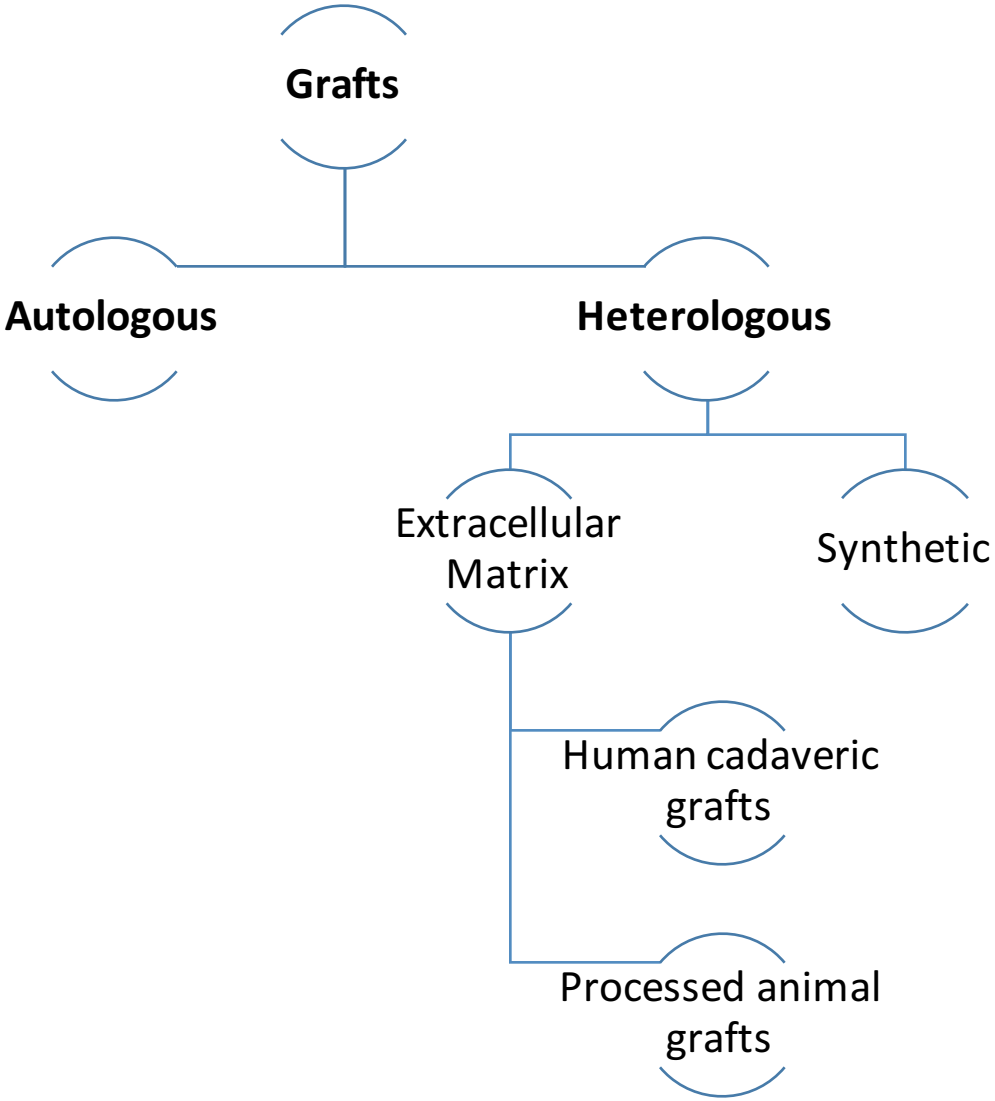
- **Tunical lengthening** procedures can be achieved by either **plaque incision** or **plaque excision and grafting**.
- **Plaque incision or partial plaque excision are preferred** over total plaque excision because the latter may cause irreversible dysfunction of the veno-occlusive mechanism of the penis, resulting in high rates of postoperative ED.



Carson et al., Outcomes of surgical treatment of Peyronie's disease, *BJU Int 2014; 113: 704–713*



Graft materials used in Peyronie's disease surgery

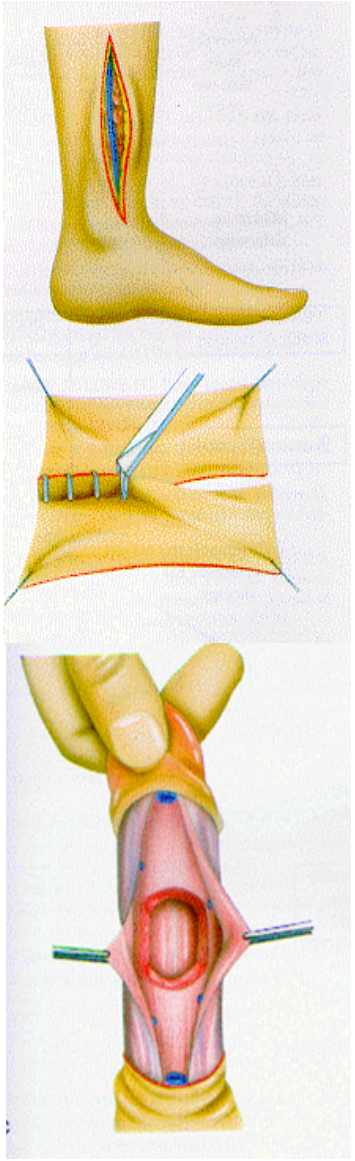


SUBSTITUTION GRAFTS

Derma	***Horton-Devine, Austoni-Pisani***	**1974**
Fascia temporalis	***Gelbard***	**1990**
Prepuce	***Krishnamurtii***	**1990**
Saphena vein	***Lue, El Sakka***	**1998**
Albuginea	***Teloken***	**2000**
Buccal Mucosa	***Cormio***	***2003***

VEIN GRAFTS

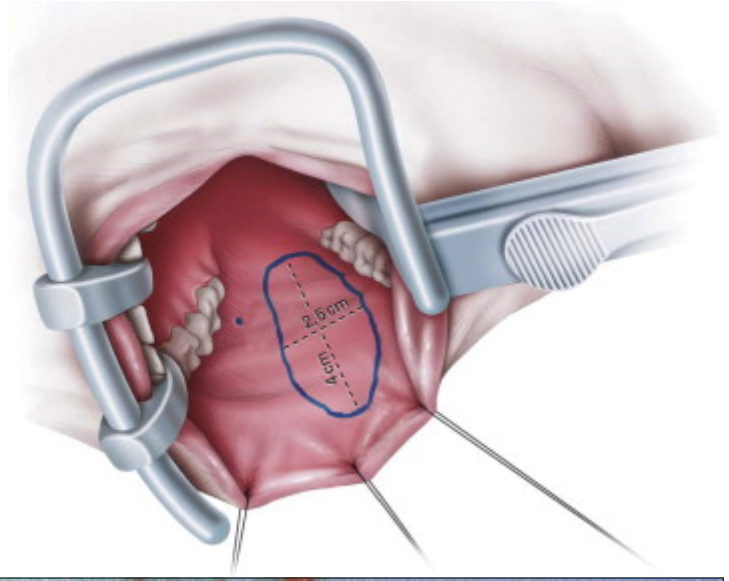
- First described by Lue et al. In 1998
- Usually harvesting site is the saphenous vein
- Presence of muscular coat and elastic fibers increases compliance
- Relatively thin vascular walls can be perfused from corporal blood supply
- Nitric oxide released from the endothelium:
  - prevents hematoma formation under the graft site
  - may improve erectile function



Chang JA et al. Surgical management: Saphenous vein grafts. *Int J Impot Res 2002;14:375–8.*
Nowicki M et al. Immunocytochemical study on endothelial integrity of saphenous vein grafts harvested by minimally invasive surgery with the use of vascular mayo stripers. A randomized controlled trial. *Eur J Vasc Endovasc Surg 2004;27:244–50.*
Tsui LC et al. Localization of nitric oxide synthase in saphenous vein grafts harvested with a novel "no- touch" technique: Potential role of nitric oxide contribution to improved early graft patency rates. *J Vasc Surg 2002;35:356–62.*

BUCCAL MUCOSA

- First described by Shioshvili et al. (2005)
- Excellent short-term results
- Prompt revascularisation (fast return of spontaneous erections)
  - Abundant supply of capillaries in the submucosal layer of buccal mucosa ensures the nourishment of the graft comparable to the vasa vasorum of a vein
- Prevents shrinkage (main cause of graft failure)
- Safe and reproducible



Shioshvili TJ, Kakonashvili AP. The surgical treatment of Peyronie's disease: Replacement of plaque by free autograft of buccal mucosa. *Eur Urol 2005;48:129–35.*
Cormio L, et al. Surgical treatment of Peyronie's disease by plaque incision and grafting with buccal mucosa. *Eur Urol 2009 55(6): p. 1469-75.*

HETEROLOGOUS GRAFTS

EXTRACELLULAR MATRIX

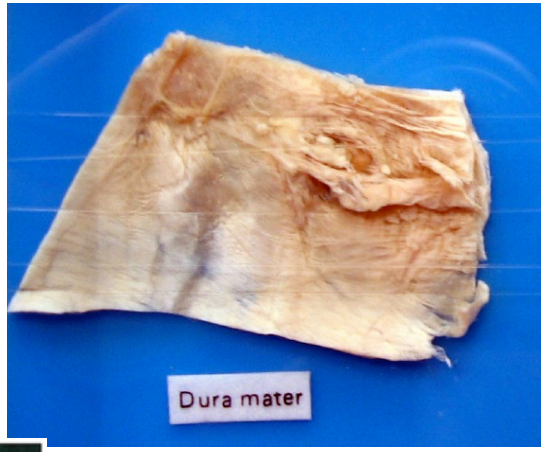
Human cadaveric grafts
Processed animal grafts

- **Widely employed** (pubovaginal sling, hypopadias repair, urethroplasty, bladder replacement/augmentation…)
- Tendency to **become almost completely absorbed** within months after implantation
- Over time, grafts are replaced by local tissue
- **Permit tissue ingrowth** with various molecules and growth factors
- **Sufficient tensile strength** during implantation which increases in time (prevents bulging, aneurysmal dilatation, veno-occlusive dysfunction)
- Minor or **no antigenic reactions**

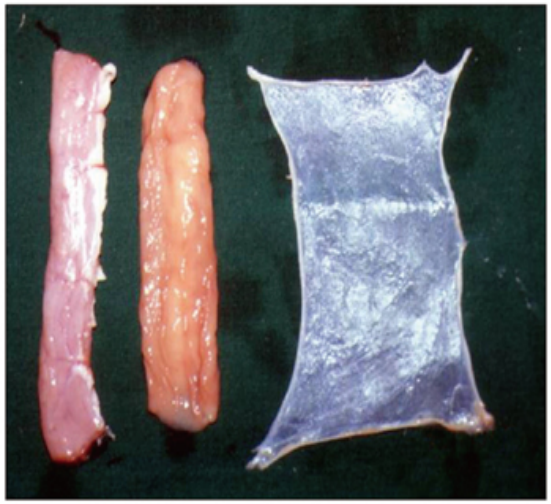
Kadioglu A K et al. Graft Materials in Peyronie's Disease Surgery: A Comprehensive Review, *J Sex Med 2007;4:581–595*

EXTRACELLULAR MATRIX

LYOPHILIZED HUMAN DURA MATER



CADAVERIC OR BOVINE PERICARDIUM



SMALL INTESTINAL SUBMUCOSA

SYNTHETIC MATERIALS

- Licht and Lewis (1985) found a success rate of 61%
- Low patient satisfaction at follow-up
- ED in 18% of the patients
- **Currently the use of these materials has been generally abandoned** except for remodeling in prosthesis surgery

Licht MR, Lewis RW. Modified Nesbit procedure for the treatment of Peyronie's disease: A comparative outcome analysis. *J Urol 1997;158:460–3.*
Schiffman ZJ, Gursel EO, Laor E. Use of Dacron patch graft in Peyronie's disease. *Urology 1985;25:38–40.*
Faerber GJ, Konnak JW. Results of combined Nesbit penile plication with plaque incision and placement of Dacron patch in patients with severe Peyronie's disease. *J Urol 1993;149:1319–20.*

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	LE	GR
Surgery is indicated when Peyronie's disease is stable for at least 3 months (without pain or deformity deterioration), which is usually the case after 12 months from the onset of symptoms, and intercourse is compromised due to deformity.	3	C
Penile length, curvature severity, erectile function (including response to pharmacotherapy in case of erectile dysfunction) and patient expectations must be assessed prior to surgery.	3	C
Tunical shortening procedures, especially plication techniques are the first treatment options for congenital penile curvature and for Peyronie's disease with adequate penile length, curvature < 60° and absence of special deformities (hour-glass, hinge).	2b	B
Grafting techniques are the preferred treatment option for patients with Peyronie's disease and normal erectile function, with no adequate penile length, curvature > 60° and presence of special deformities (hour-glass, hinge).	2b	B
Penile prosthesis implantation, with or without any additional procedure (modelling, plication or grafting), is recommended in Peyronie's disease patients with erectile dysfunction not responding to pharmacotherapy.	2b	B

- The presence of **pre-operative ED**, the use of **larger grafts**, **age >60 years**, and **ventral curvature** are considered **poor prognostic factors** for functional outcome after grafting surgery.
- Although the **risk for penile shortening** is significantly less compared to the Nesbit or plication procedures, it is still an issue and patients must be informed accordingly.
- ***No mention of a single recommended type of graft.***

"IDEAL" MATERIAL CHARACTERISTIC

- Elasticity
- Resistence
- Handly
- Not significant fibrotic-scar reaction
- Not significant fibrosis around the patch → V.O.D.
- Good istho-compatibility
- Quick preparation time
- Low costs

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GRAFT RETRACTION

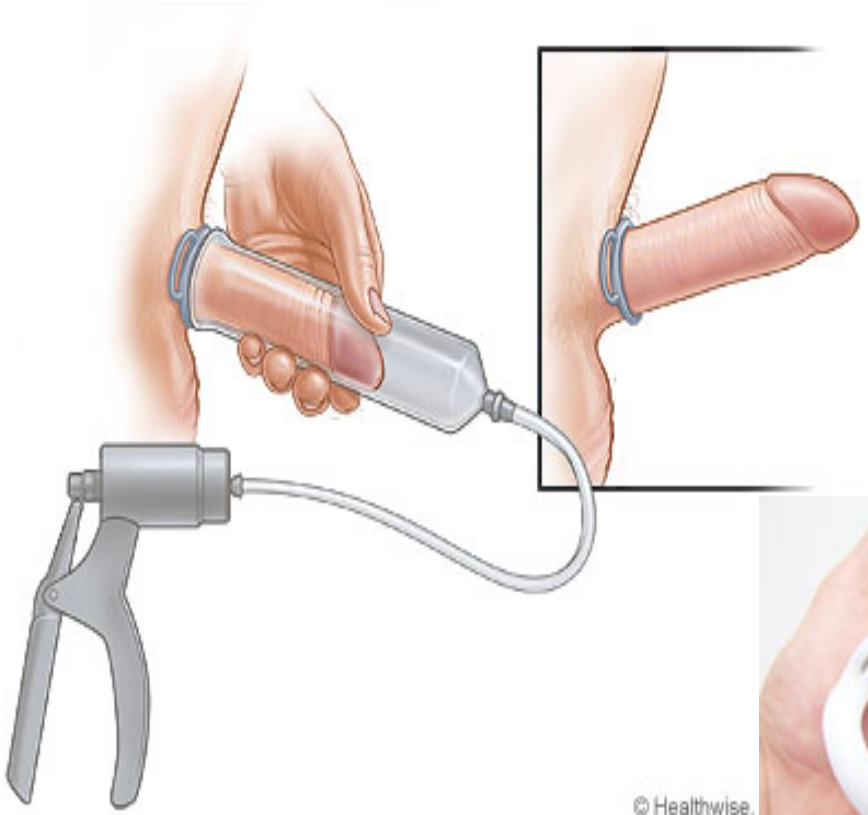
Patches take place within 72 hrs post-op

adapting at flaccid penis dimension

At the time of first erections:

RETRACTION

VACUUM DEVICE & EXTENDER



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Results of grafting for Peyronie's Disease

Author	Date Public.	Patient #	Procedure Type	%Straight	%with ED	Diminished Sensation (%)	Mean Follow-up Duration (Months)
Knoll et al	2007	162	Plaque Incision with small intestine submucosa grafting-SIS	91	21	No change in biothesiometry	38
Hatzimouratidis, Hatzichristou et al	2002	17	Tunica Albuginea Free Grafting	100	0	Not reported	39
Lue et al	1998	112	Plaque incision with venous grafting	96	12	10	18
Gelbard et al	1996	69	Plaque incision and temporalis fascia grafting	74	14	Not reported	Not reported
Egydio et al	2002	33	T. Albuginea Incision and Bovine Pericardial Grafting	87.9	Not reported	Not reported	19
Levine et al	2003	40	T. Albuginea Incision and Human Pericardial Grafting	98	30*	Not reported	22
Breyer et al	2007	19	Porcine Small Intestine Submucosa Graft-SIS	63	53	Not reported	15
Hsu et al	2007	48	Plaque incision with venous grafting	90	5	Not reported	Not reported
				74-100%	**5-53%**	**N/A**	**15-58 mos**

Who is the candidate for implant?

- ED or flaccidity distal to the plaque !
- partial ED or short penis ! / ?
- man older than 50 yrs ? ?

Algorithm

penile prosthesis

↓

penile modeling

↓

relaxing incisions or plaque excision

↓

relaxing incisions or plaque excision with grafting

↓

glansplasty

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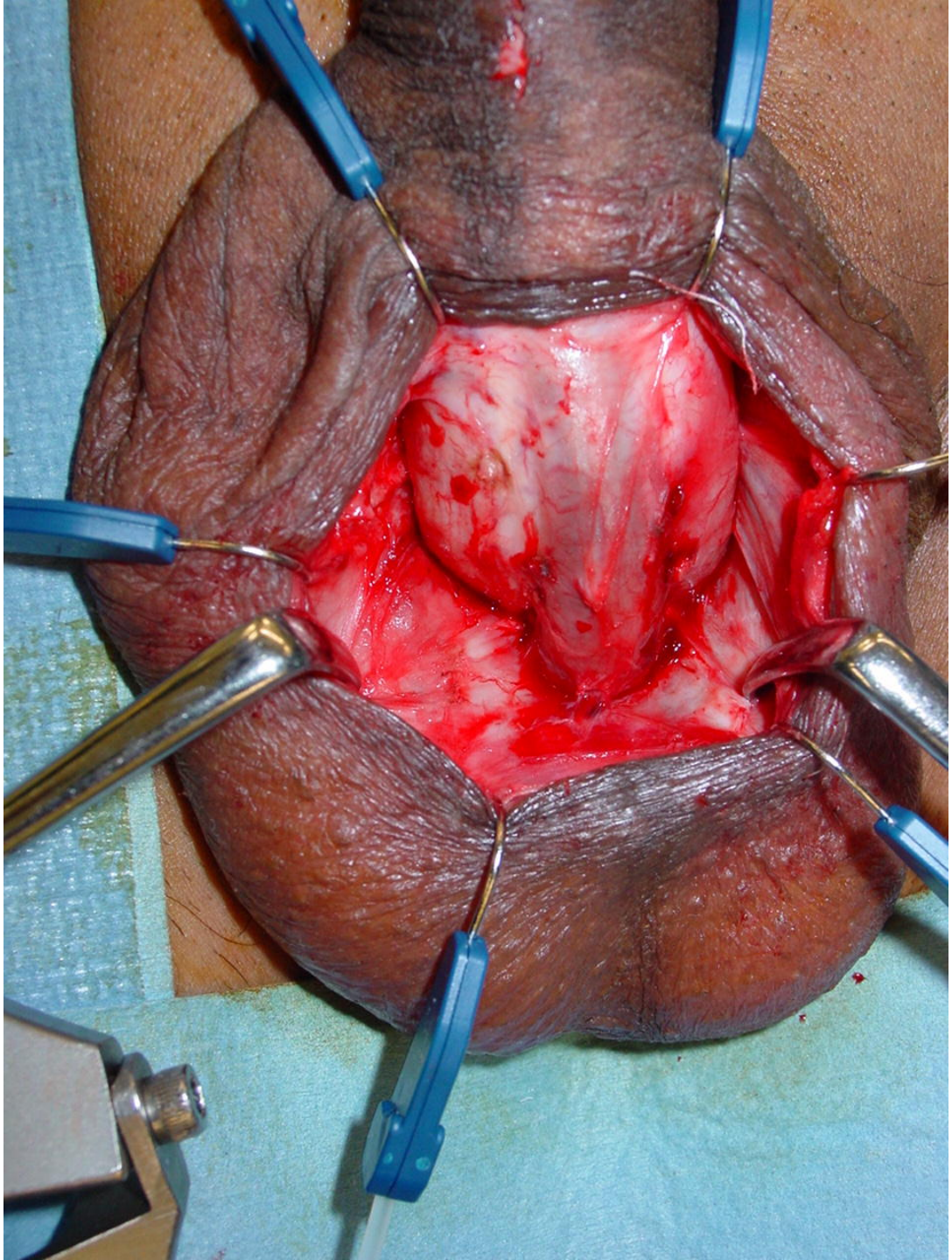
Penile Prosthesis in PD

Practical rules for implants in fibrotic corpora

1. **adequate exposure** (transverse scrotal incision)



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Penile Prosthesis in PD

Practical rules for implants in fibrotic corpora

1. adequate exposure (transverse scrotal incision)
2. adequate dilators (Rossello, Mooreville)

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Penile Prosthesis in PD

Practical rules for implants in fibrotic corpora

1. adequate exposure (transverse scrotal incision)
2. adequate dilators (Rossello, Mooreville)
3. small cilinders when needed

   (Narrow size Mentor - AMS CXM)

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Penile Prosthesis in PD

"Solutions for Specialized Cases"

- Fibrosis of corpora cavernosa, scarred corporal bodies, stenotic proximal corpora
- Dilatation to 10 mm only + smaller size

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Penile Prosthesis in PD

Penile Modeling
technique

- full cylinder inflation
- clamping of the input tubes → Avoid fluid leak
- max 3 sessions
- 20 to 30 degrees residual curvature
- avoid secondary procedure

Penile modeling session

Penile straightening

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Penile Prosthesis in PD

Penile prosthesis with modeling in Peyronie's Disease

5yr implant survival

		Mechanical failure	Revision
	n	%	%
Peyronie's	104	12.5	23
Non Peyronie's	905	12.4	26

Wilson and Delk JUrol,165,825,2001

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Penile Prosthesis in PD

Penile Prosthesis and relaxing incisions

indications

- penile curvature
- significantly impaired penile rigidity
- severe penile shortening

Montorsi, 2001

Relaxing incisions or Plaque excision : when grafting?

- **Fishman** — defects >50% of the corporal circumference
- **Levine** — defect >2 cm in length

Recommendation - PD Surgery

- Detailed consent imperative
- Follow published algorithms
- Nesbit/Plication for less severe deformity (<60°) & when borderline ED
- Grafting reserved for severe deformity>60-70° ,+/- hinge, normal erectile function, & experienced surgical team
- Prosthesis placement with additional maneuvers when refractory ED & PD

Grade C-Level 2,3.

Ralph et al, JSM 2010

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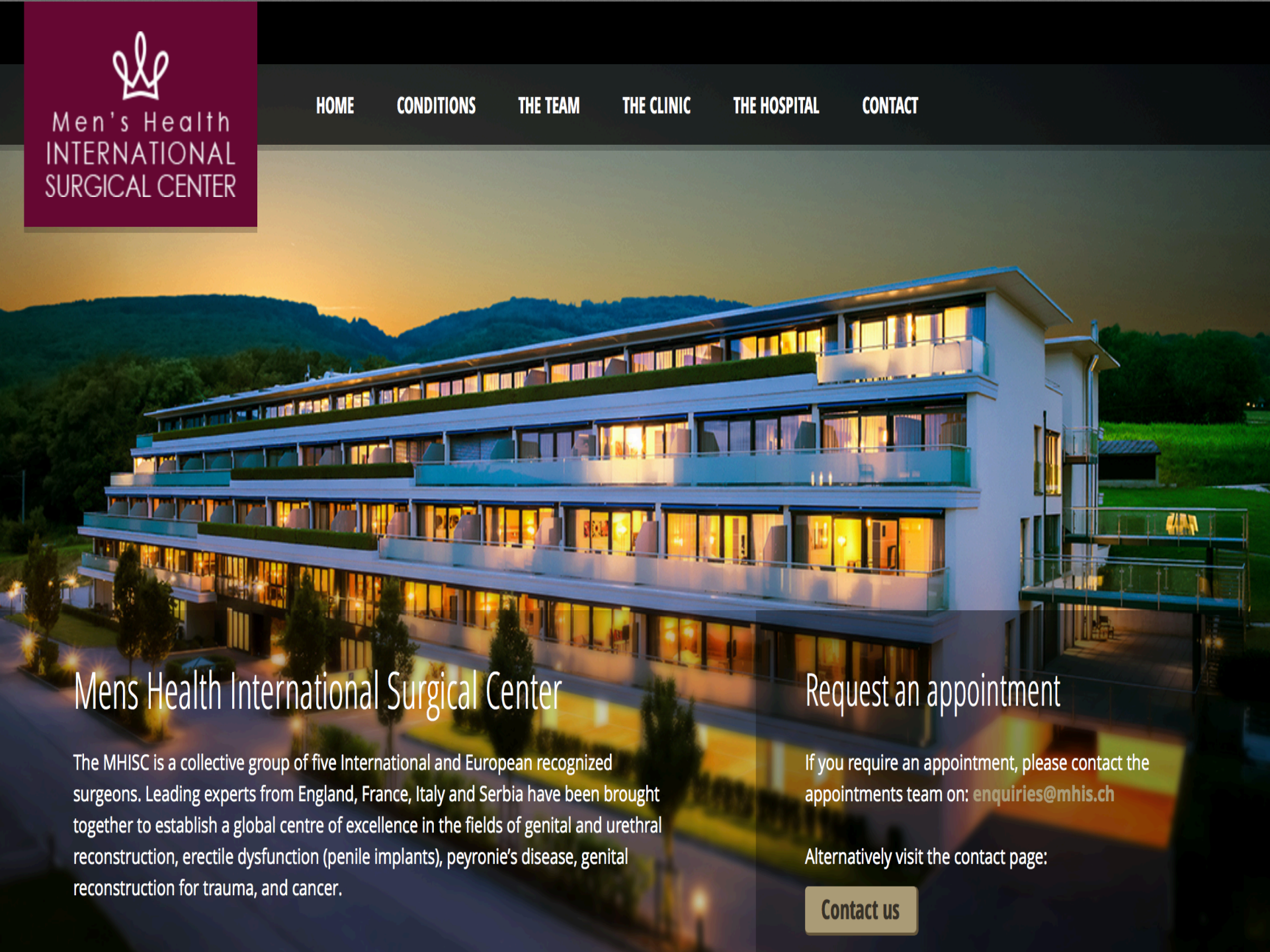

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