Этиология и диагностика Болезни Пейрони

Выполнил: Нанкин Олег – 5 курс ИКМ

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Распространенность БП

- 3-9% в общей популяции
- Увеличивается в возрасте от 30 до 49 лет
- Пик к 50-ти летнему возрасту
- 15,9% у мужчин после РПЭ

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Сопутствующие заболевания

- СД (33,2%)
- ЭД (37-58%)
- Коллагеновые заболевания (Контрактура Дюпюитрена, Болезнь Леддерхозе) до 21%
- Гипогонадизм

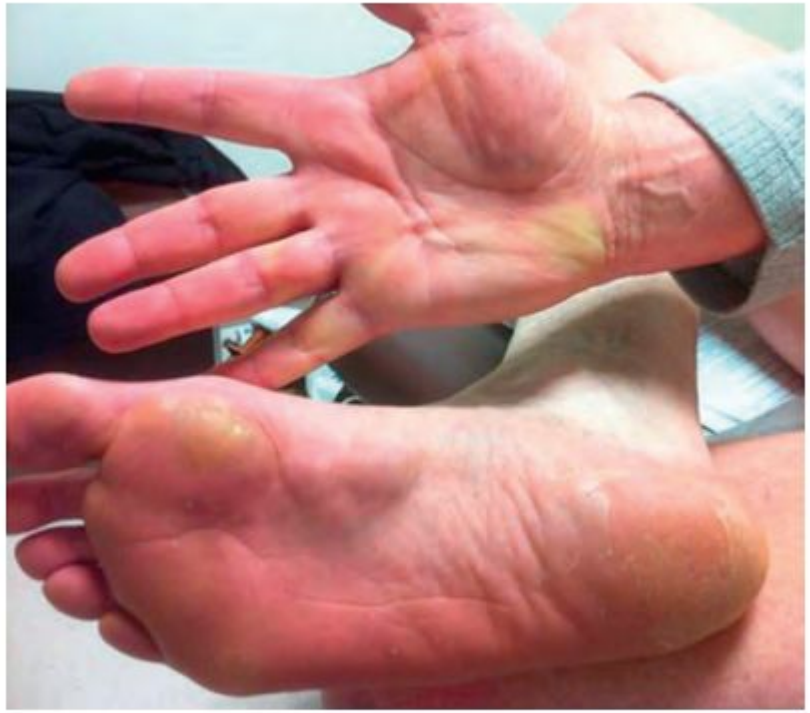

Fig. 73.5. This patient had physical evidence of Dupuytren, Ledderhose, and Peyronie's diseases.

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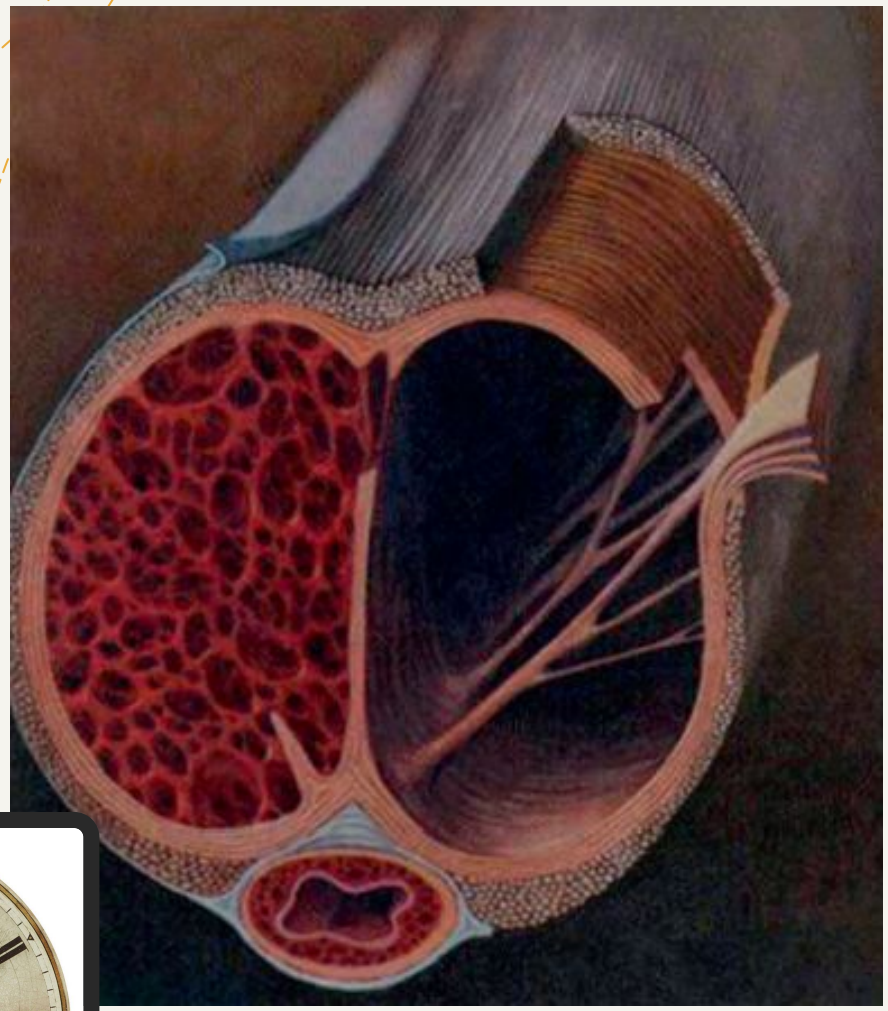
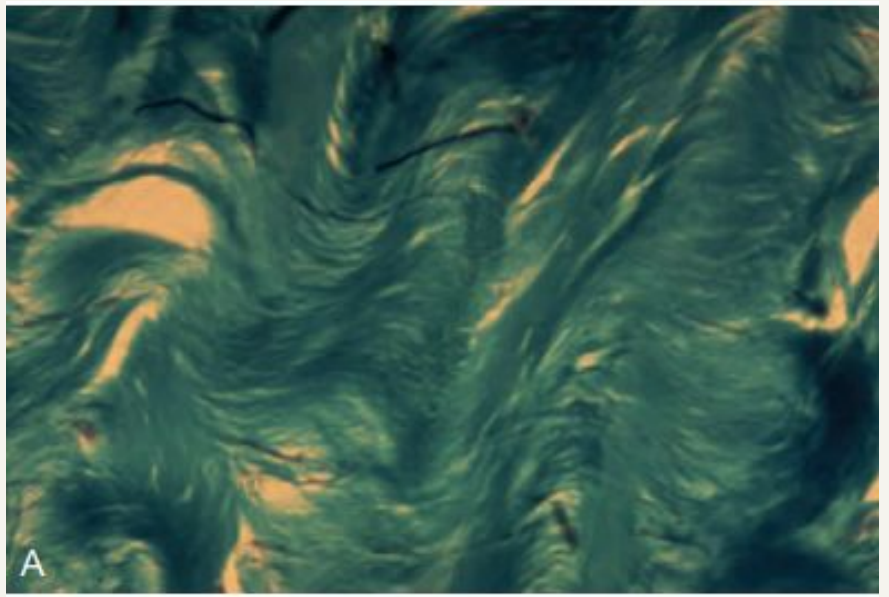
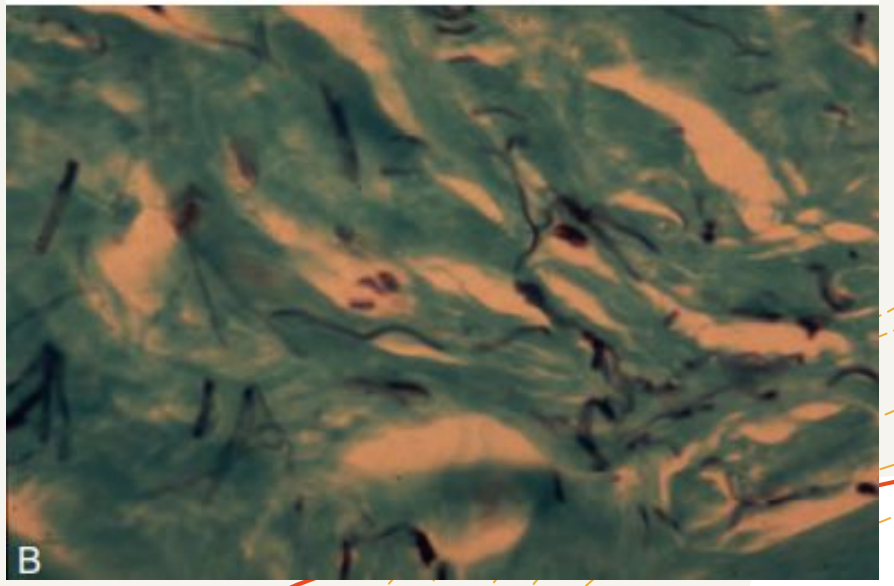
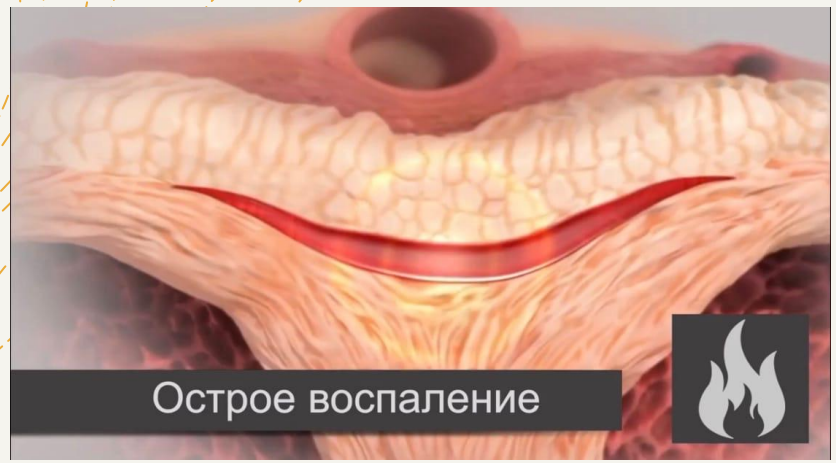
Анатомия ПЧ

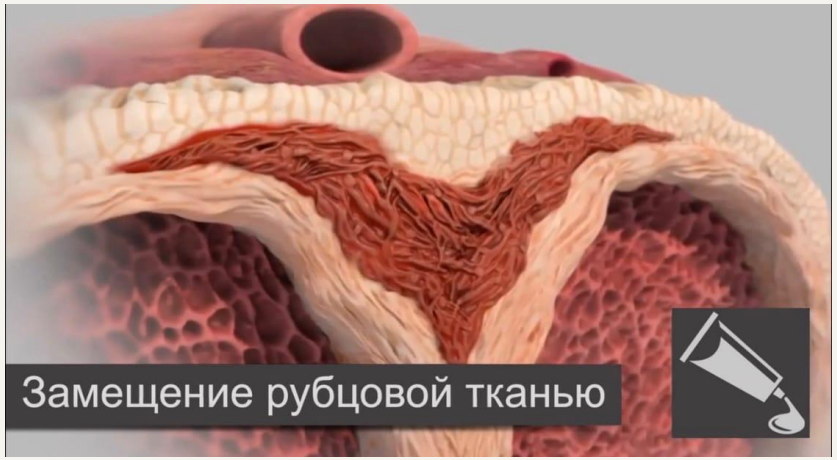


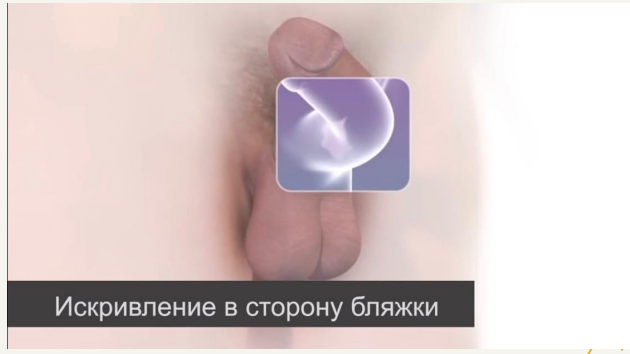


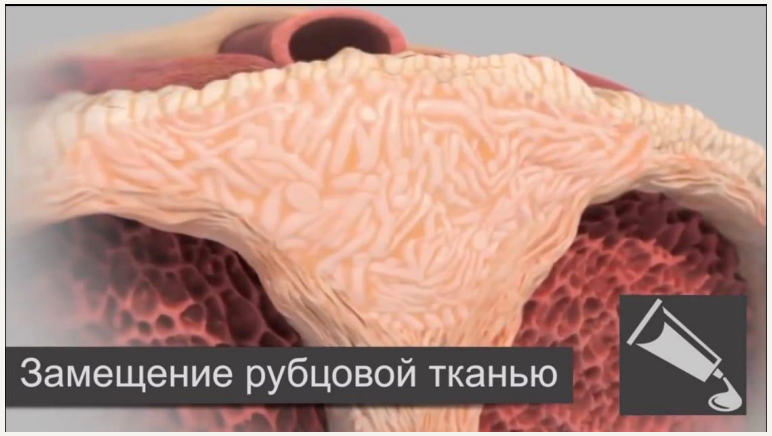


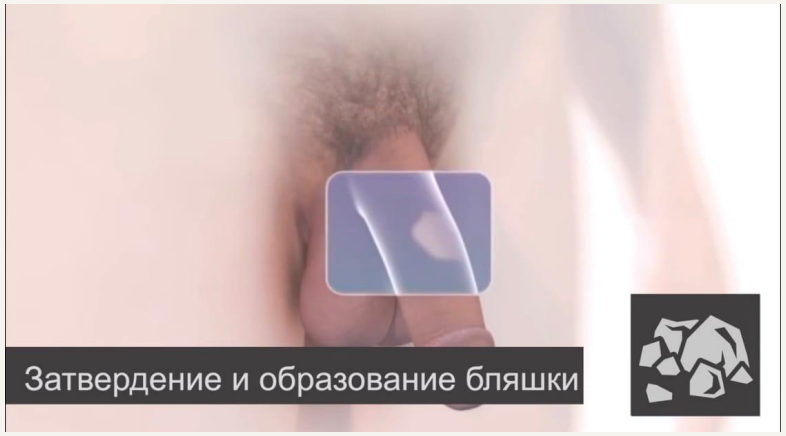
Механизм развития заболевания











YouTube канал «Честная медицина». Камалетдинов Р.Э

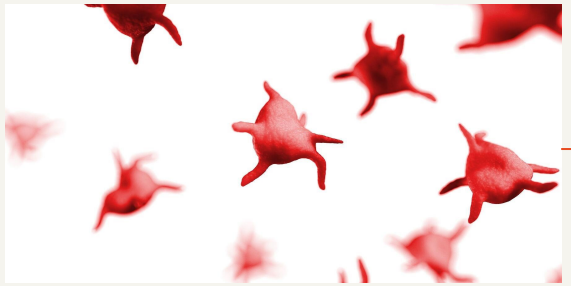
Влияние патологического заживления разрыва в развитии Болезни Пейрони

Нормальный процесс

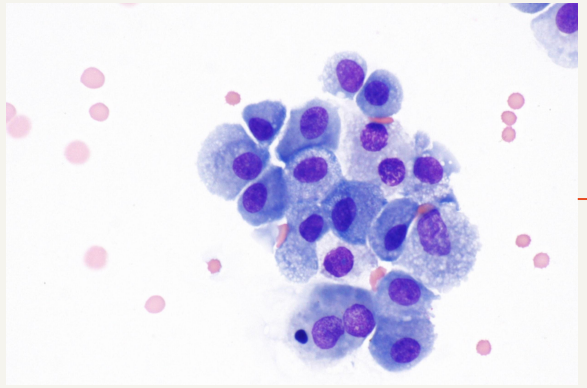
Острая фаза (воспаление)

Пролиферация

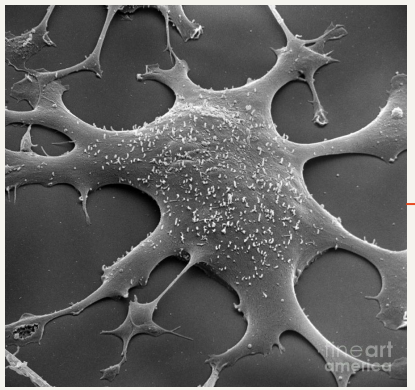
Ремоделирование

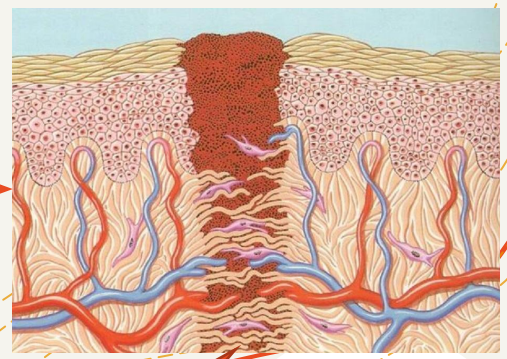


Хемотакс. агенты



TGF-β





Матричные металлопротеиназы (ММП)

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Этиология БП

+ Единичная травма ПЧ или повторяющиеся микротравмы на фоне генетической предрасположенности

Table 5. Summary of differential gene expression in Peyronie's disease

First author (Year)	Technique	Pathway	Genes
Upregulated Genes			
Del Carlo[75] (2008)	MMP protein microarrays WB	MMP pathway	MMP 1,3,10,13
Szardening-Kirchner[76] (2009)	RT-PCR	Inflammation	MCP1
Magee[54] (2002)	Clontech DNA microarray Affymetrix DNA microarray	Differentiation of fibroblasts into myofibroblasts	Fibroblast muscle type TPM, 20-kDa, MYL, FLN, gamma and alpha-smooth muscle actin (ACTA2), DES, 22-kDa smooth muscle protein
		Fibroblast attachment and collagen production	Cadherin, TGFβ1, and IGF binding protein-6
		Cellular stress response	Heat-shock protein 28 and 28-kDa heat shock protein
		Elastin degradation	Elastase IIB24
Haag[61] (2007)	RT-PCR, WB, IF	TGF-β pathway	Smad3 and Smad4
Watanabe[77] (2017)	ELISA, RT-PCR	Extracellular matrix alterations	TGF-β, IL6
Castorin[63] (2016)	IHC & biochemical assays	Multiple pathways	AQP1
Mulhall[78] (2001)	ELISA	FGF Pathway	FGF
Jalkut[79] (2004)	DNA microarrays	Osteoblast recruitment	Pleiotrophin
		Fibroblast proliferation	EGR
		Elastic fiber degradation	Elastase
Downregulated genes			
Jalkut[79] (2004)	DNA microarrays	Ubiquitination	Ubiquitin
		DNA binding (ID)	DNA-binding inhibitor Id-2 Calcineurin A
		Collagen breakdown	Collagenase IV
		Limit TGF activity	TGF modulators/decorin
Magee[54] (2002)	Clontech DNA microarray	Collagen degradation	Collagenase IV(SPARC/Osteonectin)
		HLA complex	ATF4 (ATF4)
			SPARC/Osteonectin
			Decorin Collagenase IV, (SMAD7)
			HLA-B
Zorba[26] (2012)	RT-PCR	Pro-apoptotic genes	Bcl-2, p53, Caspase 3 and Caspase 8
Thomas[62] (2016)	IF, RT-PCR	IGF Pathway	All IGF1 isoform (Ea, Eb and Ec) expressions
Other altered gene expression			
Magee[54] (2002)	Clontech DNA microarray	Collagen degradation (MMP)	MMP2 and MMP9, and thymosins (MMP activators), with TMbeta10 and TMbeta4;
			elastase IIB
			SMAD7

DES = desmin; EGR = early growth response protein; ELISA = enzyme-linked immunosorbent assay; FLN = filamin; IF = immunofluorescence; IGF = insulin growth factor; IHC = immunohistochemistry; kDa = kilodaltons; MCP = monocyte chemotactic protein; MMP = matrix metalloproteinase; MYL = myosin light chain; RT-PCR = reverse-transcriptase–polymerase chain reaction; TPM = tropomyosin; WB = Western blot.

Table 3. Studies evaluating chromosomal abnormalities in men with Peyronie's disease

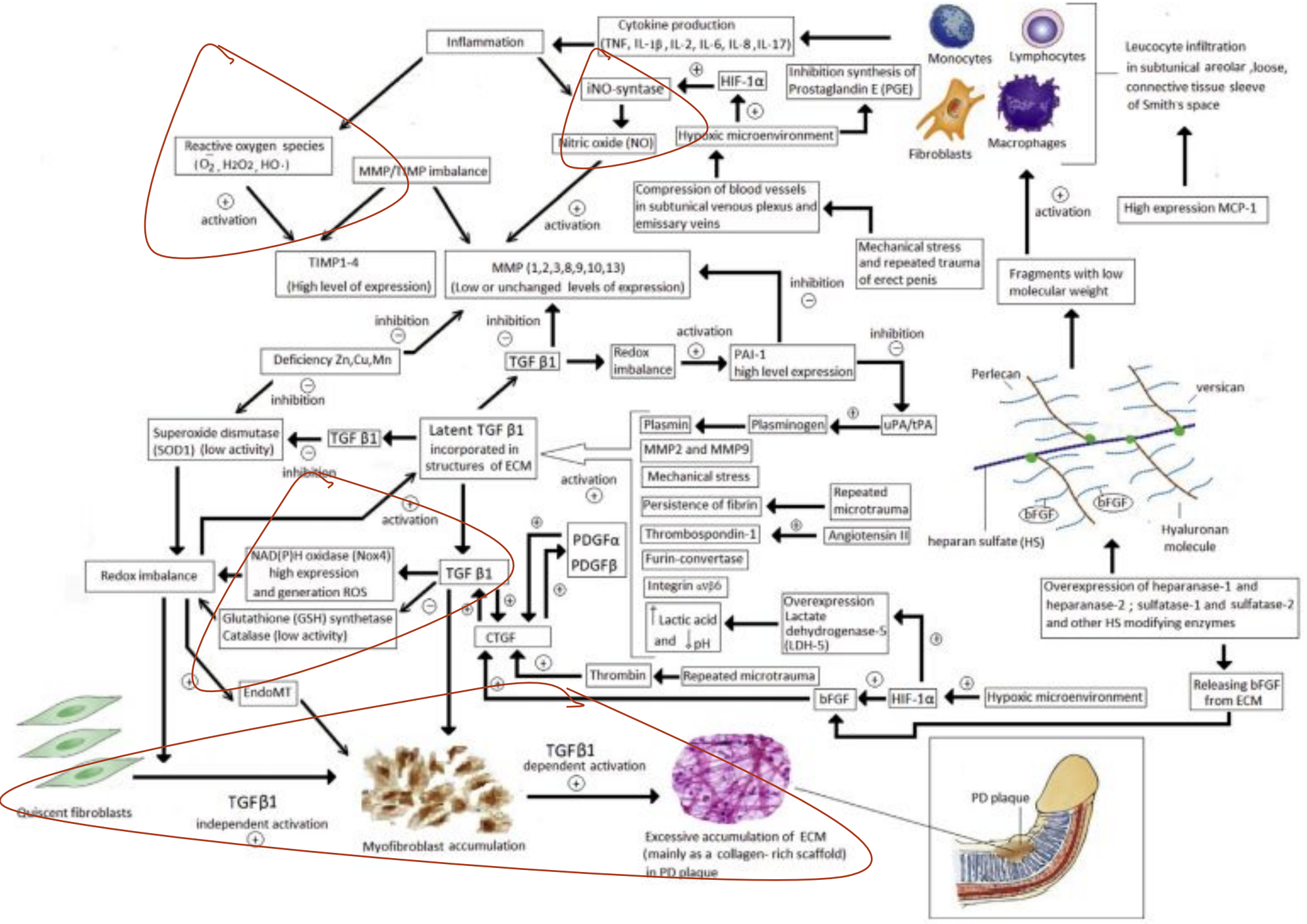
First author (Year)	Technique	Sample	Study finding
Somers[11] (1987)	Cytogenetic	9 plaque-derived cell cultures from 7 PD men	Trisomy 7 and 8
			45X,-Y deletion
			Structural chromosomal alterations & reciprocal translocations
			46XY, t(11;12)(q11,p11)
			46XY, t(1;5)(q25;q11)
			Inversion of 46XY, inv (7)(p22q36)
Guerneri[12] (1991)	Cytogenetic	Plaque-derived cell cultures from 9 PD men	Presence of chromosome instability
			8 with Y-chromosome aneusomy
			3 with chromosomal translocations
		om 5 PD men	Hybridization probes targeted to chromosomes 7, 8, 17, 18, X, and Y
			Aneusomies observed at early passage
			Chromosomal instability
			Aneuploidy with chromosomes 7, 8, 17,18, X Y

Table 2. Genetic and familial studies in Peyronie's disease

First author (Year)	Study type	No. of families/patients	Associated antigens	Results
Willscher[43] (1979)	Case report	11 patients	HLA-B27 HLA-B7	Significant association of HLA B7 cross-reacting group with PD (7/8) patients
Bias[44] (1982)	Family pedigree analysis	3 families	HLA-B7	Male-limited, autosomal dominant trait
				Traced PD through several families
				DD contracture present in both males and females
Leffell[19] (1982)	Case report	28 idiopathic PD	HLA A, B, and C	Non-association of PD with HLA antigens
Nyberg[18] (1982)	Family pedigree analysis	3 families	HLA-B7	Antigens of HLA-B7 cross-reacting group present in 3 kindreds
				Possible association of PD, HLA, and autosomal dominant inheritance
Ziegelbaum[45] (1987)	Twin study	1 family with identical twins	HLA-B7	Association of PD with HLA B7
Ralph[17] (1997)	Case report	51 PD (15 with DD)	HLA-A1, DR3, DQw2, HLA-B7, and HLA-B27	Association of PD and HLA-B27

DD = Dupuytren's disease; HLA = human lymphocyte antigen; PD = Peyronie's disease.

Kiran L Sharma [1],Manaf Alom [1],Landon



Патогенез БП

Denis V Krakhotkin [1], Volodymyr A Chernylovskyi [2], Alexandre Mottrie [3,4], Francesco Greco [5], Ruslan A Bugaev [1]

Симптомы БП

- Боль в половом члене
- Прямая деформация
- Пальпируемая бляшка
- ЭД

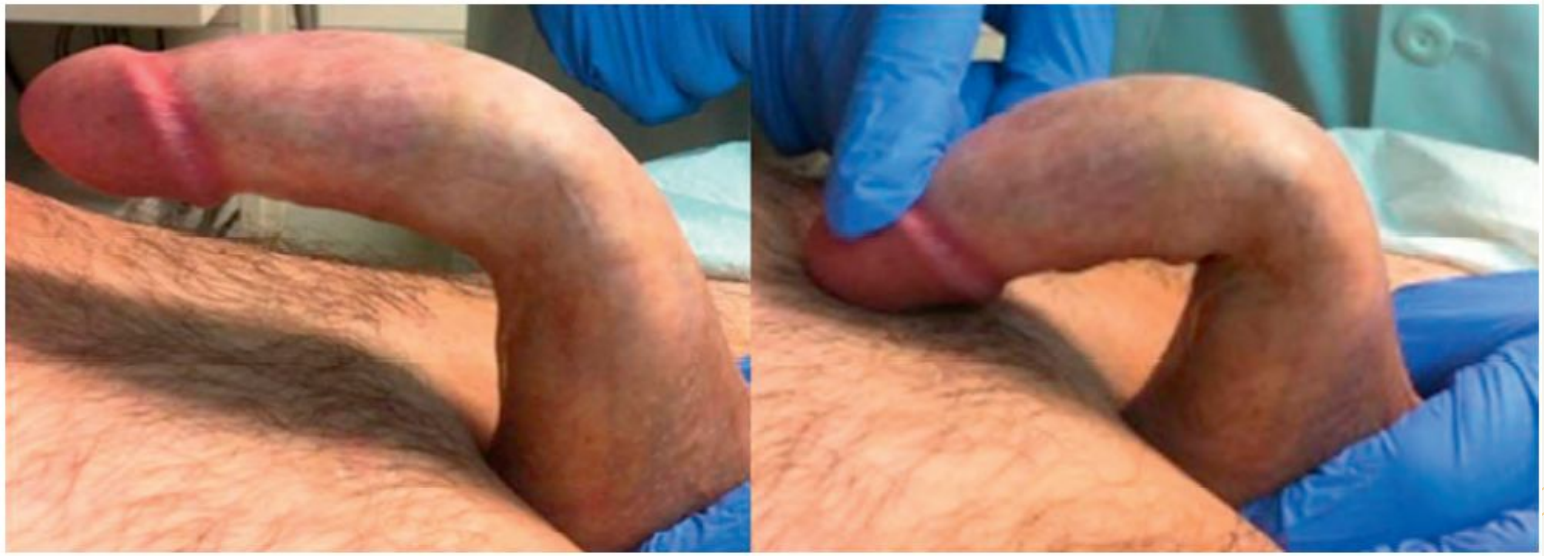


Fig. 73.9. Instability or a hinge effect of the erect penis caused by indentation is demonstrated in this severely dorsally bent penis with application of axial pressure.

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Выявление бляшки

- Бляшка при БП может проявляться в различных конфигурациях, включая шнуры; простые узелки; гантели неправильной формы, похожие на .

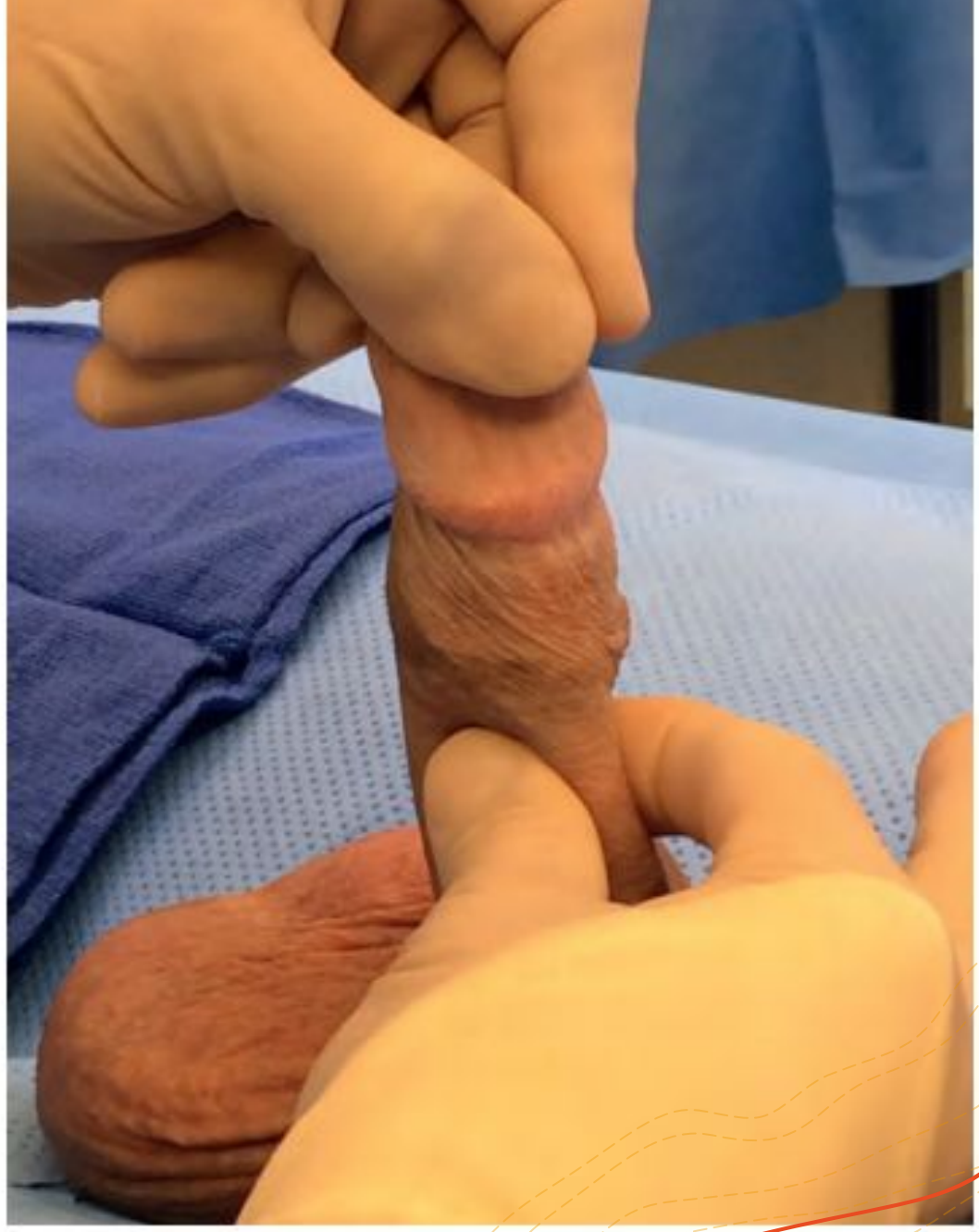

Fig. 73.6. Palpation of the penis on stretch facilitates identification of plaque.

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Диагностика БП

Анамнез заболевания!

Самофотографирование

Оценка пульса на бедренной артерии

Оценка положения бляшки и степени искривления

PEYRONIE'S DISEASE QUESTIONNAIRE (PDQ) – US VERSION

PDQ Scale

INSTRUCTIONS:

The purpose of this questionnaire is to identify any problems you may be having with erection or vaginal intercourse. Some of the questions apply to vaginal intercourse with a female partner, others do not.

Please answer all of the questions in the space provided.

If you HAVE NOT had vaginal intercourse with a female partner within the last 3 months, please mark the box below and DO NOT COMPLETE the remainder of this questionnaire.

☐ No vaginal intercourse within the last 3 months

If you HAVE had vaginal intercourse with a female partner within the last 3 months, please mark the box below and COMPLETE the remainder of this questionnaire.

☐ Yes vaginal intercourse within the last 3 months

Approximately how many times have you had vaginal intercourse in the last 3 months? _____

Number of times

What was the date of the last time you had vaginal intercourse? _____

Date

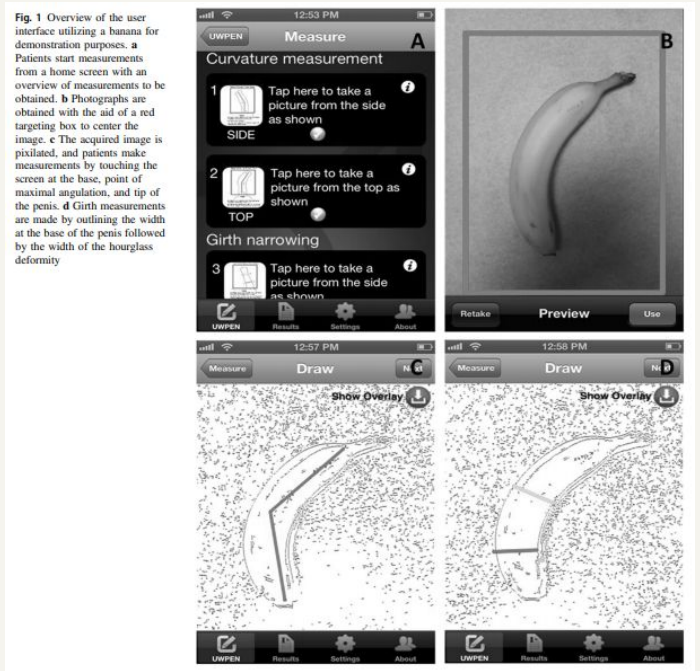


Fig. 1 Overview of the user interface utilizing a banana for demonstration purposes. **a** Patients start measurements from a home screen with an overview of measurements to be obtained. **b** Photographs are obtained with the aid of a red targeting box to center the image. **c** The acquired image is pixilated, and patients make measurements by touching the screen at the base, point of maximal angulation, and tip of the penis. **d** Girth measurements are made by outlining the width at the base of the penis followed by the width of the hourglass deformity

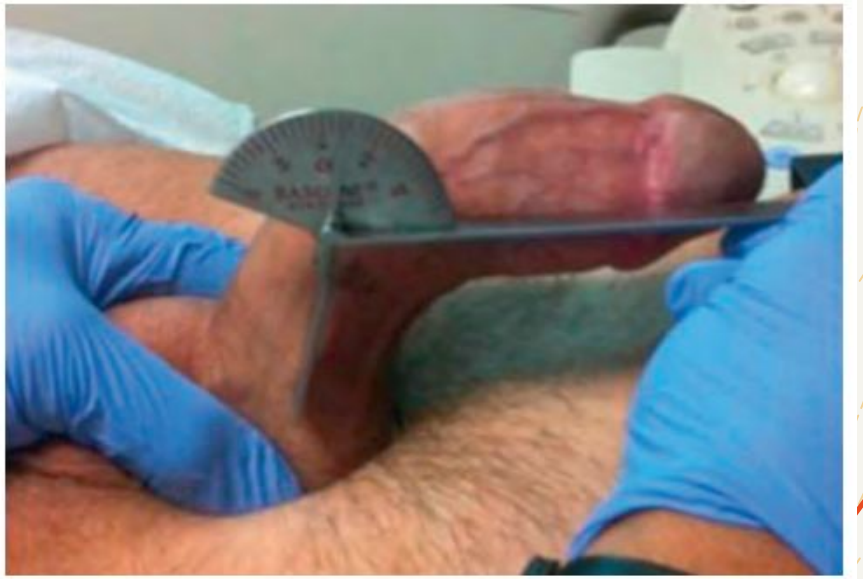


Fig. 73.8. Measurement of curvature with goniometer.

Campbell-Walsh-Wein UROLOGY

Мужчинам с ЭД рекомендуется определение **уровня общего тестостерона** в утренней сыворотке

Imaging modality	Strengths	Limitations	References
Computed tomography	Excellent visualization of calcified penile plaques	Poor visualization of noncalcified plaques, soft tissue, thickening of the tunica albuginea, and extent of inflammation High cost of money, time, and resources Cannot be performed in office Risks of radiation	Andresen *et al.* [4]
Radiography	Visualization of calcified penile plaques Cost-effective Can potentially be performed in office	Poor ability to accurately localize penile plaques Poor visualization of noncalcified plaques, soft tissue, thickening of the tunica albuginea, and extent of inflammation Risks of radiation	Andresen *et al.* [4]
MRI	Outstanding soft-tissue contrast that enables visualization of the erectile bodies, penile fascial layers, and penile vasculature Identifies noncalcified plaques in complex locations such as the corporal septum and base of the penis Identifies areas of active inflammation, which may be useful in selecting appropriate treatments for the stage of the disease	Less sensitive for visualizing calcified plaques High cost of money, time, and resources Cannot be performed in office	Kalokairinou *et al.* [2], Pawłowska and Bianek-Bodzak [3], Lindquist *et al.* [6]
Ultrasonography – high-resolution B-mode	Able to accurately detect plaques in the penile septum, dorsal, lateral, and ventral surfaces Able to detect small, nonpalpable lesions missed on physical examination Able to identify calcified plaques without the need for radiation exposure Can monitor response to treatment and complications of treatment Can be performed in office Cost- and time-effective	Operator-dependent Poor visualization of plaques in complex locations, such as the base of the penis	Kalokairinou *et al.* [2], Andresen *et al.* [4], Wilkins *et al.* [7], Prando [8], Dell'Atti & Galosi [9], Punjani *et al.* [10], Bertolotto *et al.* [11], Hamm *et al.* [12], Hauck *et al.* [13], Nomura & Sierzenski [20], Gupta *et al.* [21], McCauley & Dean [22]
Ultrasonography – color Doppler	Can determine if there is concomitant erectile dysfunction to determine if penile prosthesis is necessary for definitive management Can identify whether plaques contain the neurovascular bundle or cavernosal artery and inform surgical planning Can be performed in office Cost and time-effective	Operator-dependent	Kalokairinou *et al.* [2], Schaeffer *et al.* [14], Bertolotto *et al.* [15], Ludwig and Phillips [16], Paulis *et al.* [17], Ostrowski *et al.* [18], Kadioglu *et al.* [19], Sierzenski [20], Gupta *et al.* [21], McCauley and Dean [22], Nehra *et al.* [23]
Ultrasonography – sonoelastography	Identifies nonpalpable lesions that are not visible via ultrasonography or other imaging modalities	Still in experimental stages and would require further studies to evaluate utility in clinical practice	Taylor *et al.* [24], Richards *et al.* [25], Arda *et al.* [26], Goddi *et al.* [27], Riversi *et al.* [32••]

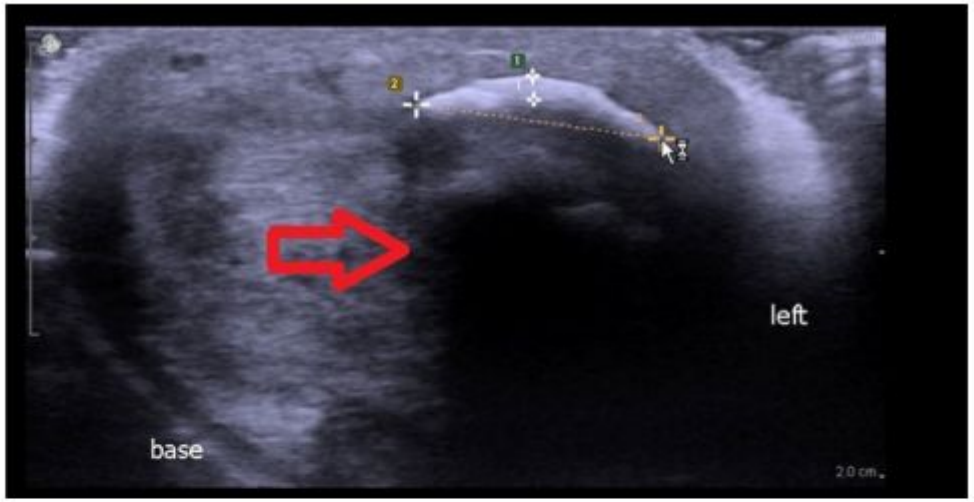
Инструментальные методы диагностики БП

УЗИ
КТ

МРТ
Ультрасонография
Рентген

Allen D Seftel

Fig. 3 B-mode ultrasound image of a dorsal type C plaque. Acoustic shadowing secondary to the calcification is denoted by the arrow



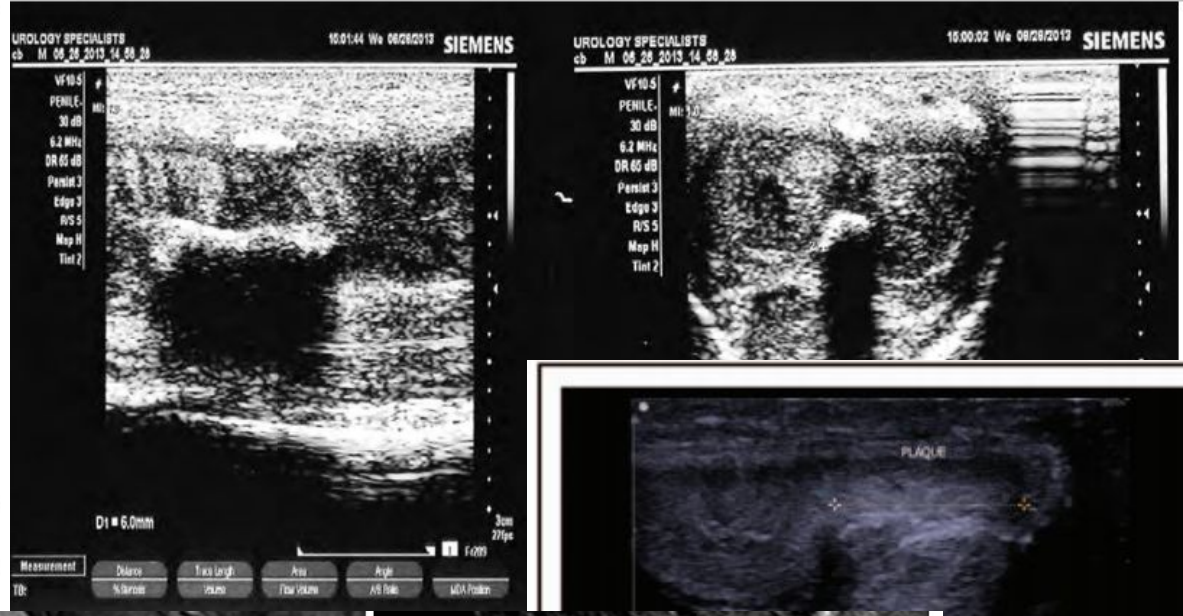
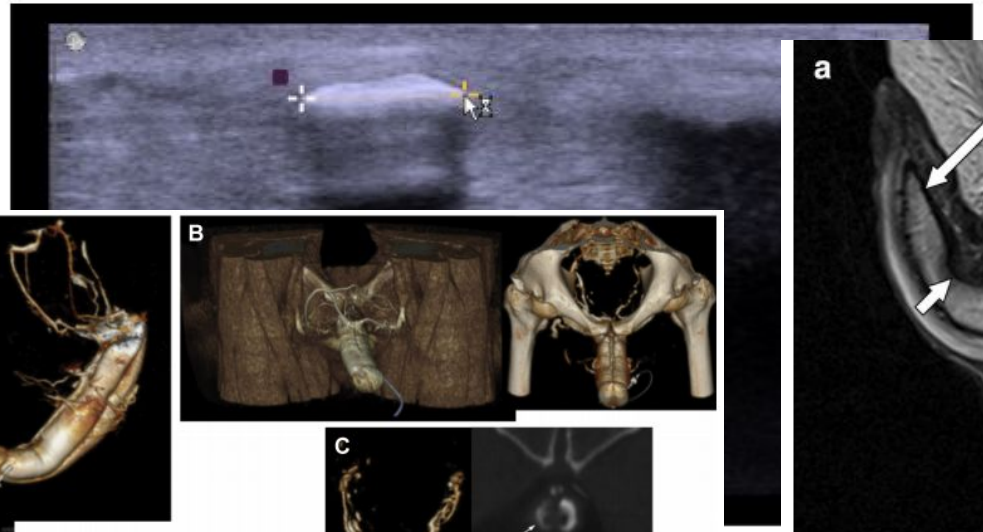


Fig. 4 Longitudinal view of Fig. 3



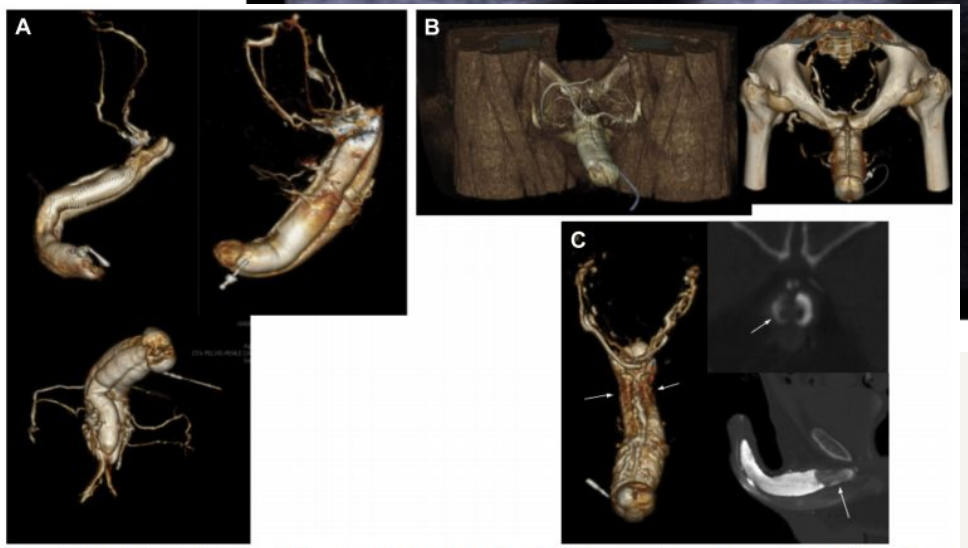


Figure 1. Characteristic CTC images. (A) Assessment of penile curvature. The left upper and lower images show complex multiplanar curvatures; the right image shows a simple dorsal curvature. (B) Assessment of venous leak. The left image shows superficial leak through the bilateral external pudendal veins into the saphenofemoral system; the right image shows some superficial leak in addition to filling of the deep pelvic veins through deep leak pathways. (C) Underlying corporal abnormalities with arrows indicating specific areas of restricted perfusion. Figure 1 is available in color online at www.jsm.jsexmed.org.

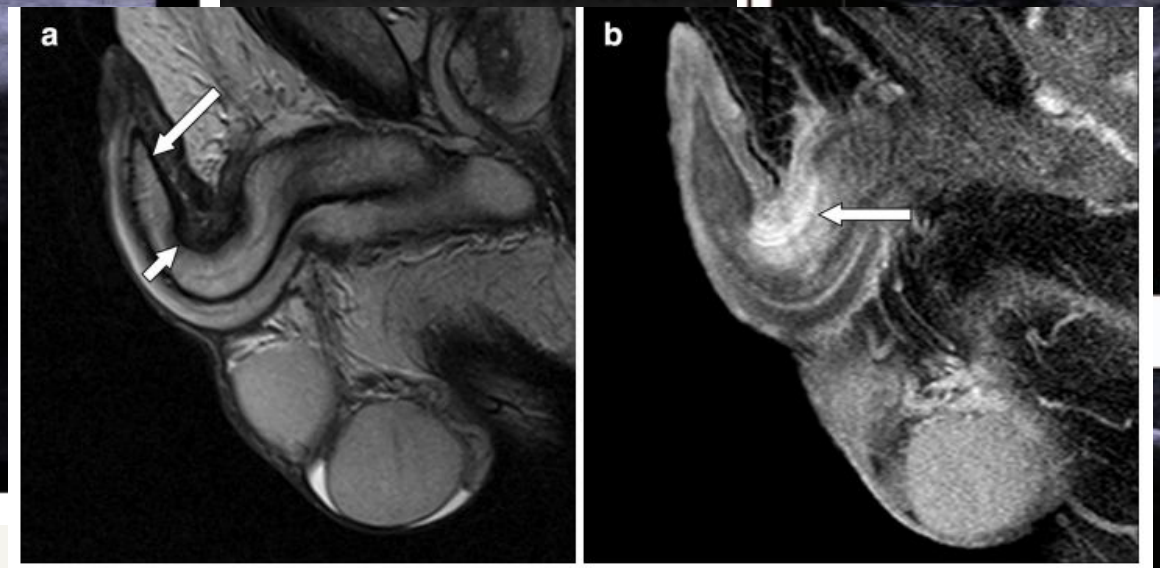
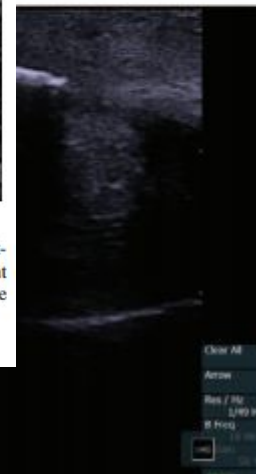


Fig. 11 **a** Sagittal T2-weighted image of the penis demonstrates thickening and irregularity of the tunica albuginea along the dorsum of the penis (short white arrow). The tunica albuginea elsewhere is uniform in thickness and has a smooth appearance (long white arrow). The plaque is located at the penile base, which is a difficult area for clinical and ultrasound assessment. **b** Post-contrast sagittal fat-saturated T1-weighted image demonstrates avid enhancement at the area of plaque-like thickening along the dorsal aspect of the tunica albuginea (white arrow)



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Клинические рекомендации по диагностике БП

Резюме по данным литературы	УД
Измерение размера бляшек на УЗИ неточное и зависит от оператора. Его нельзя рекомендовать для повседневной клинической практики	3
Для оценки сосудистых параметров, связанных с эректильной дисфункцией, требуется выполнение УЗИ с допплерографией	2a

Рекомендации	**СР**
Медицинский и сексуальный анамнез у пациентов с болезнью Пейрони должен включать длительность заболевания, боль при эрекции, изменение деформации полового члена, сложности при введении во влагалище из-за деформации и ЭД	Сильная
Физикальный осмотр включает оценку пальпируемых узелков, длины полового члена, степени искривления (домашняя фотография, вакуумные устройства, фармакологически индуцированная эрекция) и других связанных заболеваний (контрактуры Дюпюитрена, болезни Леддерхоза)	Сильная
Не используйте опросники по болезни Пейрони в повседневной клинической практике	Слабая
Не используйте УЗИ для определения размера бляшек в повседневной клинической практике	Слабая
УЗИ с допплерографией показано только для диагностики ЭД с целью оценки сосудистых параметров	Слабая

Благодарю за внимание!