

The use of ultrasonography in the evaluation and management of peyronie's disease

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Objective: To outline the steps in the ultrasonographic evaluation of Peyronie's disease and determine its use in the diagnosis, classification and treatment of this disorder.

Design: Video presentation

Setting: Outpatient Urology clinic.

Patient(s): All patients with Peyronie's disease undergoing penile ultrasonography who signed a written, informed consent for video and audio recording.

Intervention(s): Alprostadil + papaverine + phentolamine intracavernosal injections, penile ultrasonography, phenylephrine intracavernosal injections.

Main Outcome Measure(s): Penile plaque classification, penile blood flow and degree of penile curvature.

Result(s): During the period November 2018-December 2019, 156 patients were evaluated for Peyronie's disease using ultrasonography, from which 109 patients presented calcified plaques. Out of these, 59 (45.1%) patients were found to have type 2 plaques, making this one the most common type of plaque. The average age in this group of patients was 59.8 ± 6.0 years, the average degree of curvature was $49.4 \pm 23.0^\circ$, and the average duration of symptoms was 27.2 ± 36.9 months. During the vascular evaluation with Doppler ultrasonography, 23 (14.7%) patients presented $PSV 25 < 30 \text{ cm}^3/\text{s}$. Degree of curvature was not found to be associated with the severity of calcification ($p = 0.17$). This video demonstrates the advantages that ultrasonography provides in the evaluation and management of Peyronie's disease compared to other imaging modalities. It avoids radiation, easily detects plaques and calcification, and is more familiar to urologists. We outline the steps of

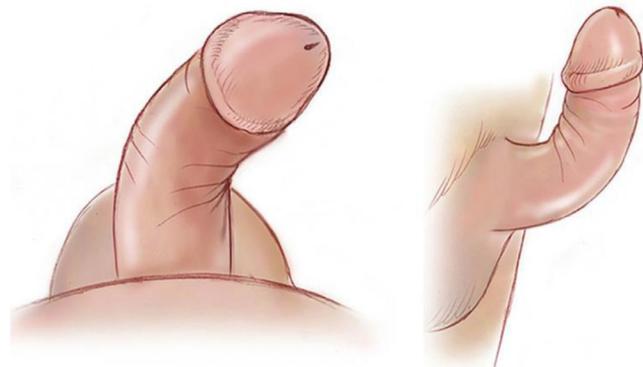


Fig. 1. Peyronie's disease illustration.

Gelman, Joel, et al. "Peyronie's Disease Information And Examples". *The Center For Reconstructive Urology*, www.centerforreconstructiveurology.org/peyronies-disease/ [2].

the procedure; the possible findings during the penile tissue evaluation; the different types, location and size of plaques; the direction of penile curvature and deformity, and the possible findings on Doppler ultrasonography, which can further guide the management of these patients [Figs. 1–4, Tables 1–4](#).

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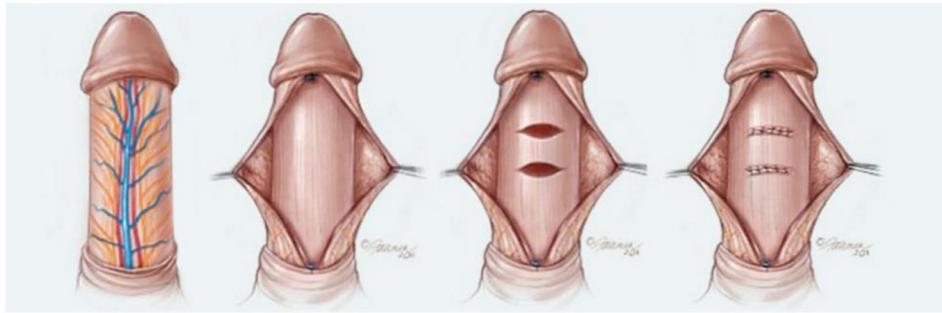


Fig. 2. Plication surgery illustration. Gelman, Joel, et al. “How To Straighten a Bent Penis - Plication”. *The Center For Reconstructive Urology*, www.centerforreconstructiveurology.org/peyronies-disease/surgery-plication/ [3].

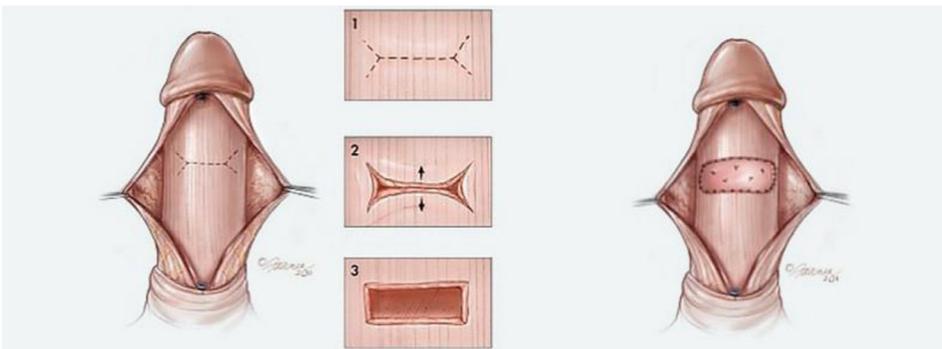


Fig. 3. Grafting surgery illustration. Gelman, Joel, et al. “Penis Graft Surgery To Straighten Curvature”. *The Center For Reconstructive Urology*, www.centerforreconstructiveurology.org/peyronies-disease/surgery-graft/ [4].

Table 1
Peyronie’s disease plaque typing chart.

Plaques in Peyronie’s Disease	
Types of plaques	Characteristics
Type 1	Tunica albuginea thickening with slight or no shadowing.
Type 2	Tunica albuginea with moderate calcification and partial shadowing.
Type 3	Tunica albuginea calcification with complete shadowing.

Pawłowska E, Bianek-Bodzak A. Imaging modalities and clinical assessment in men affected with Peyronie’s disease. *Polish J Radiol* [Internet]. 2011 Jul [cited 2019 Dec 17];76(3):33–7. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22802839> [1].

Table 2
Prospective evaluation of calcification in patients with Peyronie’s disease evaluated in the University of Miami Hospital, Department of Male Reproductive Medicine, in the period November 2018-December 2019.

Prospective Evaluation of Calcification			
	Type 1	Type 2	Type 3
N (%)	33 (30.2)	59 (45.1)	17 (15.6)
Age (years)	53.8 ± 12.0	59.8 ± 6.0	55.3 ± 7.9
Curvature (degrees)	36.9 ± 16.0	49.4 ± 23.0	48.2 ± 23.8
Duration of symptoms (months)	38.8 ± 61.7	27.2 ± 36.9	17.6 ± 12.6

Table 3
Patients with Peyronie’s disease who were candidates for collagenase clostridium histolyticum treatment in the University of Miami Hospital, Department of Male Reproductive Medicine, in the period November 2018-December 2019.

Candidates for Collagenase Clostridium Histolyticum			
	Noncalcified	Calcified	p
N (%)	26 (28.3)	66 (71.7)	
Curvature (degrees)	46.1 ± 14.7	51.2 ± 17.6	0.17
Duration of symptoms (months)	39.5 ± 61.2	22.6 ± 30.3	0.34

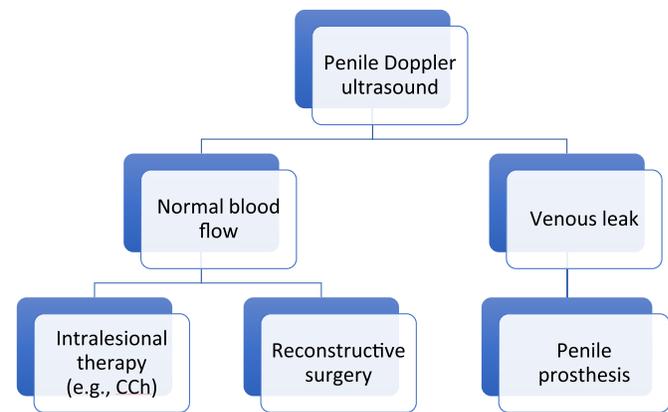


Fig. 4. Treatment of Peyronie’s disease based on penile Doppler ultrasonography findings. Pramur M, Masterson J, Masterson T. *Current Opinion in Urology*. 2020 [5].

Table 4
Vascular evaluation of patients with Peyronie’s disease in the University of Miami Hospital, Department of Male Reproductive Medicine, in the period November 2018-December 2019.

Vascular evaluation Vascular parameter	N (%)
PSV <25 cm ³ /s	18 (11.5%)
PSV 25 < 30 cm ³ /s	23 (14.7%)
EDV >5 cm ³ /s	12 (7.7%)

Conclusion

- Penile Doppler ultrasound is a useful tool in the evaluation and management of Peyronie’s disease.
- Understanding the type of calcification and degree of curvature can aid to decide the management of Peyronie’s disease.

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Disclosure

The authors report no conflicts of interest in this work.

Supplementary materials

The video related to this article can be found online at:
[doi:10.1016/j.urolvj.2020.100047](https://doi.org/10.1016/j.urolvj.2020.100047).

References

- [1] E. Pawłowska, A. Białek-Bodzak, Imaging modalities and clinical assessment in men affected with Peyronie's disease, *Polish J. Radiol.* [Internet] 76 (3) (2011 Jul) 33–37 [cited 2019 Dec 17] Available from <http://www.ncbi.nlm.nih.gov/pubmed/22802839>.
- [2] Joel Gelman, et al., Peyronie's disease information and examples, The center for reconstructive urology (2019) <http://www.centerforreconstructiveurology.org/peyronies-disease/>. (Accessed 12 April 2020).
- [3] Joel Gelman, et al., How to straighten a bent penis - plication, The center for reconstructive urology (2019) <http://www.centerforreconstructiveurology.org/peyronies-disease/surgery-plication/> (Accessed 12 April 2020).
- [4] Joel Gelman, et al., Penis graft surgery to straighten curvature, The center for reconstructive urology (2019) <http://www.centerforreconstructiveurology.org/peyronies-disease/surgery-graft/>.
- [5] Madhumita Pramar, Masterson, John M. Masterson, Thomas A. III, The role of imaging in the diagnosis and management of Peyronie's disease, *Current Opinion in Urology* 30 (3) (2020) 283–289, doi:[10.1097/MOU.0000000000000754](https://doi.org/10.1097/MOU.0000000000000754).