An innovative technique for endoluminal treatment of the Nutcracker Syndrome: the 'T-STENT technique'

Pierre Sarradon, MD, MSCVE, HPTH Saint-Jean, Toulon, Var, France

Objective:

The compression of the left renal vein, so-called Nutcracker syndrome, is so far balanced between heavy surgical techniques and stenting of the left renal vein with the risk of migration of the stent. We report an innovative endovascular technique for the treatment of this syndrome: the T-STENT technique aims to place a stent in the renal vein and to secure its fixation by the placement of a second stent perpendicularly in the ovarian vein, through strictly endoluminal access, offering a safe endovascular procedure.

Methods:

After prior embolization of pelvic varicose veins, balloon pre-dilation of the left renal vein (12/4 balloon) is performed via puncture of the common femoral vein. A self-expanding stent (Sinus XL 16/4) is then deployed in the left renal vein, extending distally beyond the ostium of the left ovarian vein. Subsequently, selective catheterization of the left ovarian vein is performed through the mesh of the stent, and a self-expanding stent (6/4) is deployed into the upper end of the ovarian vein, with the upper end of the stent slightly protruding beyond the mesh of the first stent. Upon release, the end of this stent opens up above the mesh of the renal stent, achieving fixation of the renal stent by a perpendicular stent in the ovarian vein.

Results:

The procedure was successfully performed under local anesthesia with mild sedation in 4 patients. The mean operative time was 58 minutes (47-66) and the injected iodine volume was 70cc (65-82). The outcome showed immediate relief of lumbar pain, and contrast-enhanced CT scan confirmed the excellent result with a reassuring aspect of the fixation process. The follow-up of 9 months (12-6) showed the stability of the result.

Conclusion:

We believe that the T-Stent technique is an appealing solution for treating Nutcracker Syndrome, combining a minimally invasive approach with safety. A larger series of cases will be necessary to confirm this initial observation.

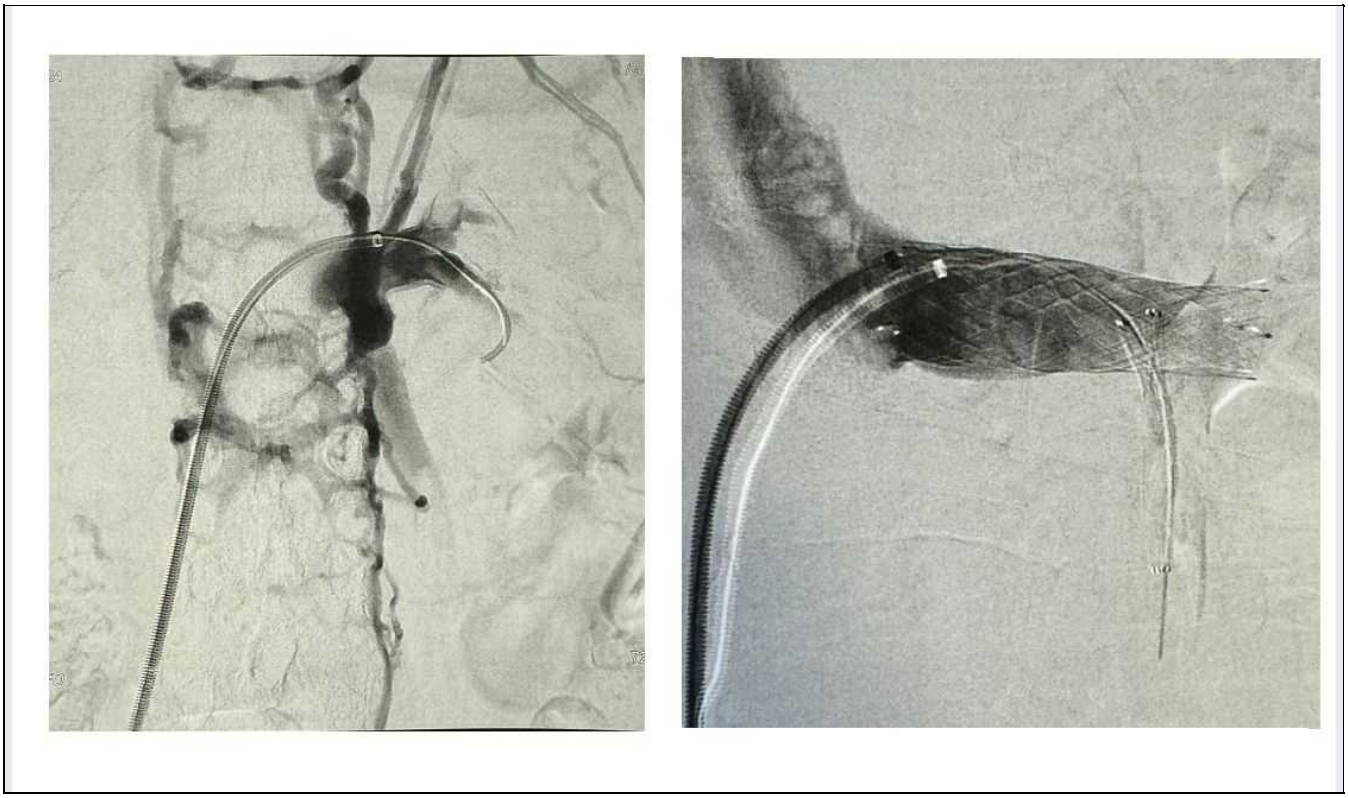

Fig 1 Nutcracker - Before/after T-Stent

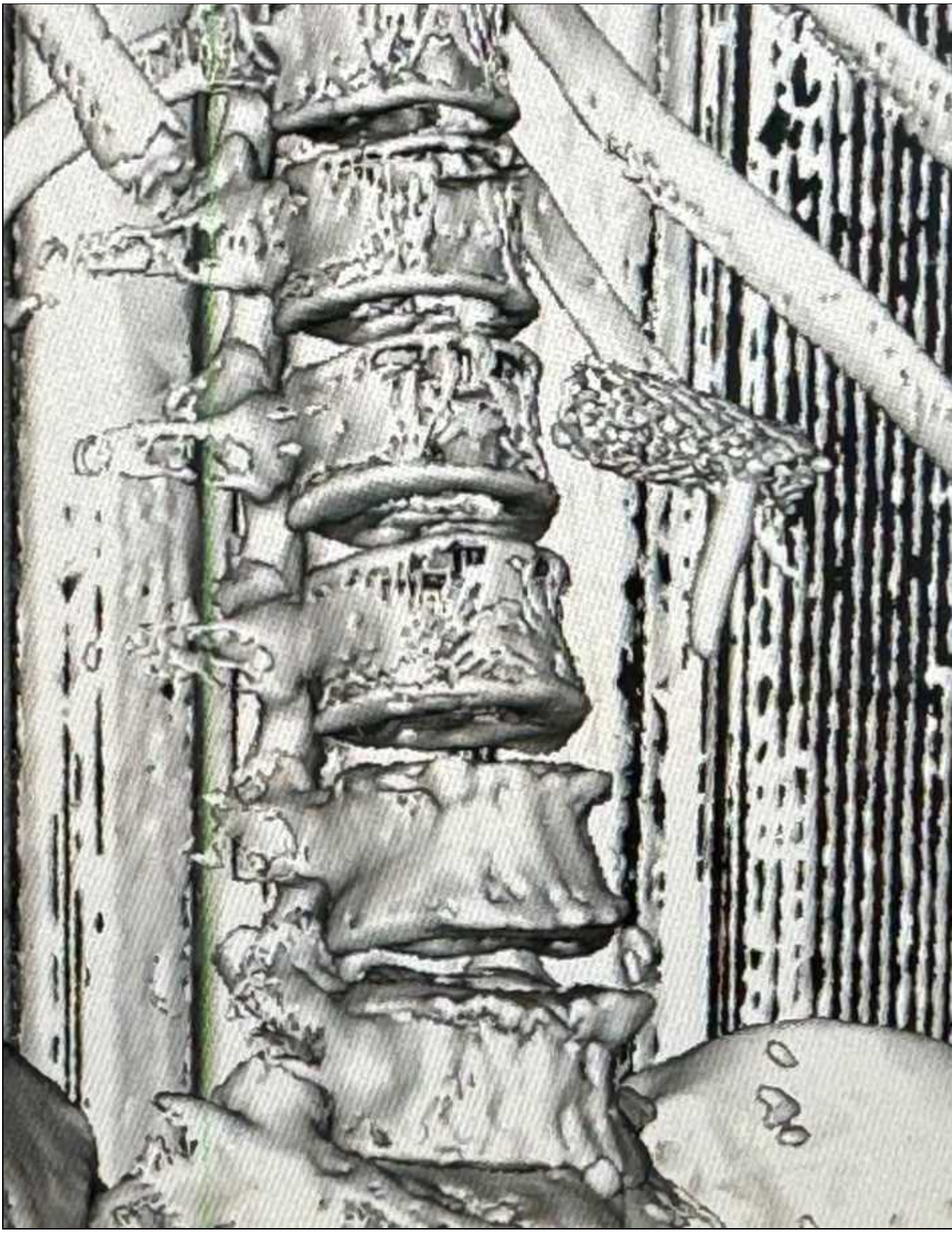

Fig 2 3D Angioscanner