

Infographic. Endoscopic versus open discectomy for sciatica? Which is more cost-effective?

Pravesh Shankar Gadrajaj , on behalf of the PTED-study group

BACKGROUND

Sciatica caused by lumbar disc herniation is a frequently encountered disease in the general population.¹ Even though the natural course is favourable, due to its high prevalence, lumbar discectomy is a frequently performed procedure resulting in high costs for society. Conventional open microdiscectomy is seen as the standard procedure to treat sciatica. Surgical innovation and the development of endoscopes have led to the development of endoscopic techniques such as percutaneous transforaminal endoscopic discectomy (PTED).² These techniques were developed with the intention of reducing surgical invasiveness and thus improving patient outcomes. A recent meta-analysis showed moderate-level evidence of no differences in leg pain reduction between PTED and microdiscectomy. Furthermore, it showed that no economic evaluations have been conducted.³ Therefore, the PTED Study was conceived and conducted.⁴ This randomised controlled trial demonstrated non-inferiority of PTED to microdiscectomy in leg pain reduction. The question remains: when PTED is non-inferior to microdiscectomy, which procedure is more cost-effective?⁵

METHODS

An economic evaluation was conducted of the data of the PTED Study; a non-inferiority, randomised controlled trial conducted at four hospitals in the Netherlands, enrolling patients with at least 6 weeks of sciatica.⁴ Patients were randomised between microdiscectomy and PTED in a 1:1 ratio. The primary outcome of the PTED Study was leg pain as measured on a 0–100 visual analogue scale (VAS). For the economic evaluation, quality-adjusted life years (QALYs) and the VAS leg pain were analysed alongside the costs to determine cost-utility and cost-effectiveness at 12-month follow-up.

FINDINGS

In total, 613 patients were enrolled: 309 were randomised to microdiscectomy and 304 to PTED (figure 1).⁶ At 12 months, 87% of the patients had follow-up data available. Patients randomised to PTED experienced a 6.9-point larger leg pain reduction compared with patients

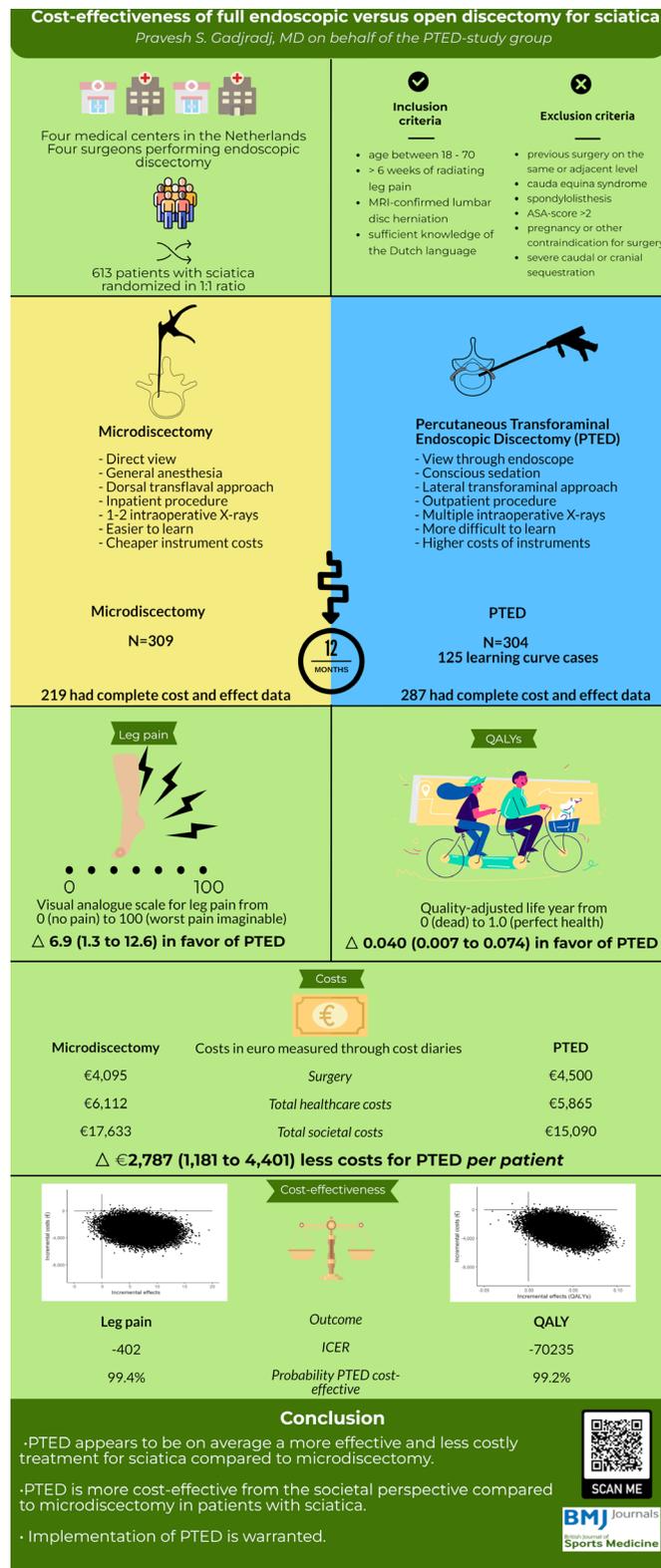


Figure 1 Infographic on the results of the economic evaluation of the PTED-study. ICER, incremental cost-effectiveness ratio; QALYs, quality-adjusted life years.

randomised to microdiscectomy (95% CI: 1.3 to 12.6). Only costs for surgery were higher for PTED. Total societal costs were lower in the PTED group, with an average of €2787 per procedure. Therefore, PTED had a probability of almost 100% of being cost-effective over microdiscectomy for both leg pain and QALYs.

CONCLUSION AND IMPLICATIONS

In conclusion, PTED appears to be more cost-effective from the societal perspective compared with microdiscectomy in patients with sciatica. For patients, PTED warrants implementation to provide a less invasive alternative treatment compared with microdiscectomy. On a societal level, PTED warrants implementation to reduce the total societal costs of surgery for sciatica.

Department of Neurological Surgery, Brain and Spine Center, New York, New York, USA

Correspondence to Dr Pravesh Shankar Gadjradj, Department of Neurological Surgery, Brain and Spine Center, New York, NY 10021, USA; p.gadjradj@erasmusmc.nl

Acknowledgements The author would like to thank Mr Revish Soekhoe for his assistance in designing the infographic.

Collaborators The PTED Study group consists of Dr Pravesh Gadjradj, Dr Paul Depauw, Dr Pieter Schutte, Dr Arnold Vreeling, Dr Job van Susante, Dr Sidney Rubinstein, Dr Biswadji Harhangi, Dr Wilco Peul and Professor Dr Maurits van Tulder. Dr Hanna Broulikova and Dr Hanneke van Dongen were involved in the economic evaluation.

Contributors PSG developed this work as a member of the PTED Study group.

Funding This study was funded by ZonMw, the Netherlands Organization for Health Research and Development (project number 837004013).

Competing interests None declared.

Patient consent for publication Not required.

Ethics approval This study involves human participants and approval was granted by the Medical Ethical Committee of the VU Medical Centre Amsterdam (NL50951.029.14). Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

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To cite Gadjradj PS, . *Br J Sports Med* Epub ahead of print: [please include Day Month Year]. doi:10.1136/bjsports-2022-105766

Accepted 9 May 2022

Br J Sports Med 2022;0:1–2.
doi:10.1136/bjsports-2022-105766

ORCID iD

Pravesh Shankar Gadjradj <http://orcid.org/0000-0001-9672-4238>

REFERENCES

- 1 Ropper AH, Zafonte RD. Sciatica. *N Engl J Med* 2015;372:1240–8.
- 2 Gadjradj PS, Harhangi BS. Percutaneous Transforaminal endoscopic discectomy for lumbar disk herniation. *Clin Spine Surg* 2016;29:368–71.
- 3 Gadjradj PS, Harhangi BS, Amelink J, et al. Percutaneous Transforaminal endoscopic discectomy versus open Microdiscectomy for lumbar disc herniation: a systematic review and meta-analysis. *Spine* 2021;46:538–49.
- 4 Seiger A, Gadjradj PS, Harhangi BS, et al. PTED study: design of a non-inferiority, randomised controlled trial to compare the effectiveness and cost-effectiveness of percutaneous transforaminal endoscopic discectomy (PTED) versus open microdiscectomy for patients with a symptomatic lumbar disc herniation. *BMJ Open* 2017;7:e018230.
- 5 Gadjradj PS, Rubinstein SM, Peul WC, et al. Full endoscopic versus open discectomy for sciatica: randomised controlled non-inferiority trial. *BMJ* 2022;376:e065846.
- 6 Gadjradj PS, Broulikova HM, van Dongen JM, et al. Cost-effectiveness of full endoscopic versus open discectomy for sciatica. *Br J Sports Med* 2022. doi:10.1136/bjsports-2021-104808. [Epub ahead of print: 20 Feb 2022].