

# Erectile function restoration post radical prostatectomy: Utilisation of a new novel nerve grafting procedure



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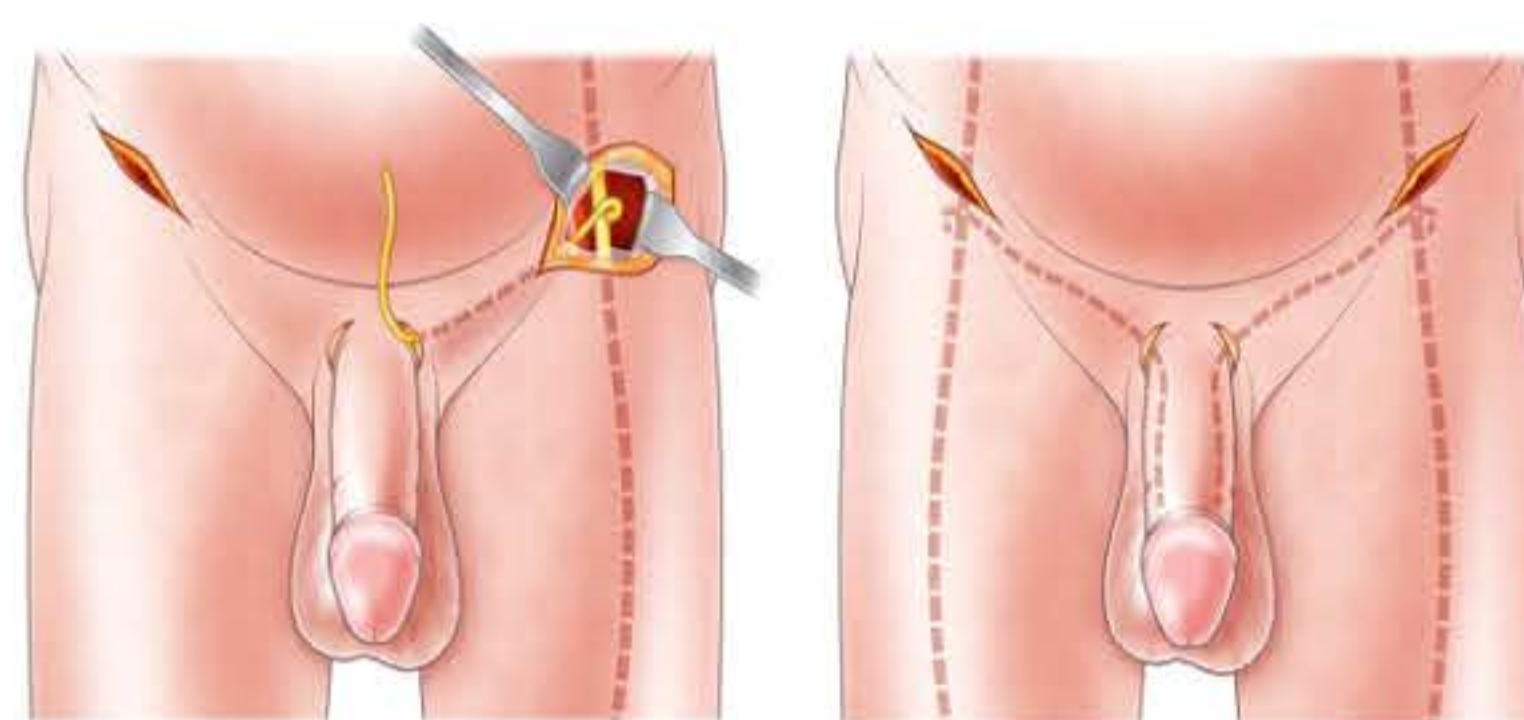
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## Introduction

- Radical prostatectomy for the treatment of localised prostate cancer results in ~70% of men suffering lifelong impotency (5,900 men in Australia each year),<sup>1</sup> regardless of the type of surgical technique.<sup>2</sup>
- Erectile dysfunction treatment options are limited, with prosthetic rehabilitation modalities commonly being associated with adverse complications.<sup>3</sup>
- In March 2017, Trindade et al. reported a non-prosthetic penile reinnervation surgical technique that successfully restored erectile function in 6 out of 10 impotent men 2 years after nerve sparing radical prostatectomy.<sup>4</sup>
- We report the outcomes of a Melbourne pilot study of a completely novel penile reinnervation surgical technique using somatic to autonomic nerve bridges from the femoral nerve to restore erectile function in impotent men after nerve- and non-nerve sparing radical prostatectomy.

## Novel surgical technique

- The novel somatic to autonomic nerve bridge surgical technique involves minimally invasive harvesting of both sural nerves.
- Sural nerves are used as end to side nerve grafts from both femoral nerves to bilaterally reinnervate the corpora cavernosa of the penis.
- Nerve bridges are sutured to the femoral nerve utilizing appropriate microsurgical techniques.
- Surgery is performed in ~2.5 hours
- Patients are discharged after an overnight stay in hospital



## Pilot study

- ❖ Novel nerve graft surgery was performed on 21 men with permanent erectile dysfunction:
  - >6 months after **non-nerve sparing** (NNS) radical prostatectomy
    - 10 patients (NNS)
  - >2 years after **nerve sparing** (NS) radical prostatectomy
    - 7 patients (Bilateral NS)
    - 4 patients (Unilateral NS)
- ❖ **Outcome: Erectile dysfunction was assessed independently of the treating surgeons using the 5-item version of the International Index of Erectile Function (IIEF-5) Questionnaire**

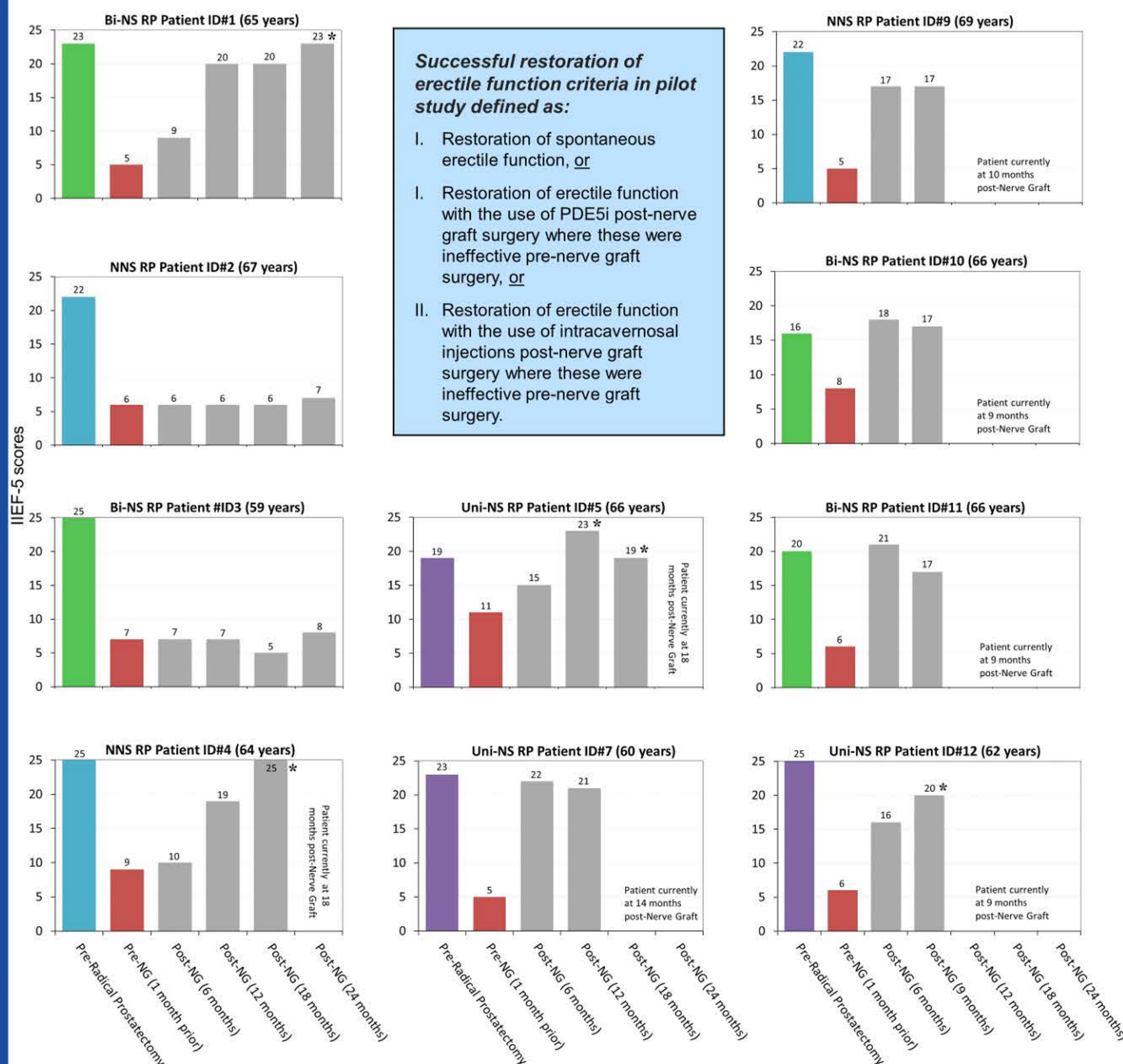
### Patient inclusion criteria:

1. Be aged younger than ~70 years
2. Have had satisfactory erectile function (IIEF ≥ 16) prior to radical prostatectomy surgery
3. Have PSA levels <0.1ng/ml in their most recent test following radical prostatectomy
4. Have moderate to severe erectile dysfunction (IIEF ≤ 11) prior to novel nerve graft surgery with or without oral and/or injectable therapies
5. Have had their radical prostatectomy within 5 years
6. Have no hormonal related conditions or diabetes
7. Have not had radiotherapy to treat prostate cancer (external beam and/or brachytherapy)
8. Have never taken androgen deprivation therapy

## Results

- 21 impotent men underwent novel penile reinnervation post-radical prostatectomy
- Mean age was 63.1 ± 5.3 years (range 54 to 72.5 years) at the time of nerve graft surgery
- 3 patients were excluded:
  - One patient failed to follow penile rehabilitation regimes post-nerve grafting
  - One patient revealed severe erectile dysfunction prior to radical prostatectomy (IIEF = 6 on PDE5is)
  - One patient had comorbidity (insulin-dependent diabetes)
- Of the 18 remaining patients in study, 8 patients have not reached one year post-nerve grafting and become potent
- Total number of patients included in study outcome analysis = 10 patients
- **8 out of 10 patients had restored erectile function sufficient to achieve & maintain full penetration (IIEF ≥ 17) following nerve graft surgery.**
- 4 of the 8 patients with restored erectile function do not require any penile rehabilitation treatment (PDE5i &/or intracavernosal injections)

## Pilot study outcomes: International Index of Erectile Function (IIEF-5) scores



## Conclusions

- Innovative somatic to autonomic nerve graft surgery restored erectile function in 8/10 men with permanent erectile dysfunction following radical prostatectomy in a Melbourne pilot study.
- Alternate modalities (eg. penile prostheses) remain a treatment option for the 2 patients where erectile function was not restored following nerve graft surgery.
- A larger study is currently underway to assess the effectiveness of this novel nerve graft procedure to restore erectile function and assess men's health related quality of life (HRQOL) following nerve graft surgery.

## References

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\* 4/8 patients with restoration of spontaneous erectile function sufficient to achieve & maintain erections for penetration without penile rehabilitation therapy (PDE5i &/or intracavernosal injections)