Long-Term Trifecta Outcomes of Bladder Neck Resection in Female PBNO: Surgical Insights

Kalra S[1*], Bolar S[1], Pal A[1], Dorairajan L[1], K.S. S[1], R. B[1], Narkhede V[1]

1. Jawaharlal Institute of Postgraduate Medical Education and Research, India

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Background

- BNI/BNR underutilised in female PBNO
- Lack of extended follow-up studies [1]
- Aim: Assess **long-term Trifecta outcomes** (effectiveness, reoperation rates, complications)
- To understand optimal surgical technique

Methods

- Ambispective (2018–2024), 41 PBNO female patients
- **Diagnostic Criteria (VUDS)[2]:**
  - Qmax <15 ml/s with sustained detrusor activity of any magnitude
  - Inadequate bladder neck opening on fluoroscopy
- **Indications for Surgery:** - Failed medical management
  - Upper tract changes
  - Significant post-void residual
- Early: BNI at 5 & 7 o'clock(n=10) {4 needed early intervention(BNR)}
- Modified BNI at 3 & 9 o'clock + BNR (n=31)
- Mean follow-up: 41.6 months

Results

Trifecta Component	Outcome Measure	Results	
		Pre-op	Post-op
Effectiveness (n=41)	IPSS	21.8 ± 10.7	6.2 ± 1.5
	Qmax	6.7 ± 3.08 ml/s	22.6 ± 6.8 ml/s
	PVR	280 ± 80 ml	29.5 ± 12.7 ml
	36 improved (pdet@Qmax = 53.2 ± 12.5 cmH_2O) 5 no improvement (pdet@Qmax = 15.4 ± 3.8 cmH_2O)		
Redo surgeries	Re-resection (**Figure 1**)	4/10 patients (within 1 month) (Initial 10 cases)	
	Post technique modification (n=31)	2 (1 recurrence @ 2 years) (1 bladder neck contracture @ 3 years)*	
Complications	Urinary incontinence (**Figure 2**)	2 (1 transient resolved in 3 months) (1 incontinent on foleys) #	
	Bladder neck contracture (**Figure 4**)	1 (at 3 years)	

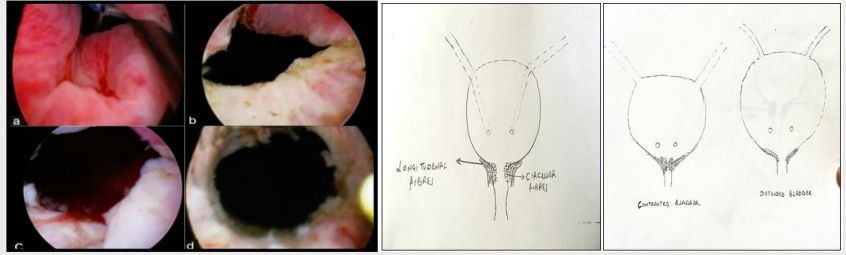
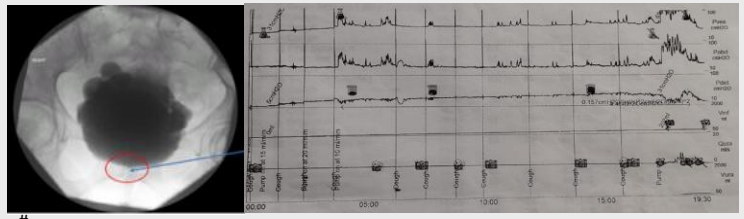


Figure 1: (a) Bladder neck (b) BNI at 5 and 7 o'clock (Inadequate resection) (c) Re-resection between 5 and 7 o'clock (d) **Modified technique** with BNI at 3 and 9 o'clock + BNR (e) Dynamic shift of bladder neck fibers during filling



#Figure 2: VUDS of patient who developed **urinary incontinence** post-BNR, attributed to impaired compliance, poor contractility.

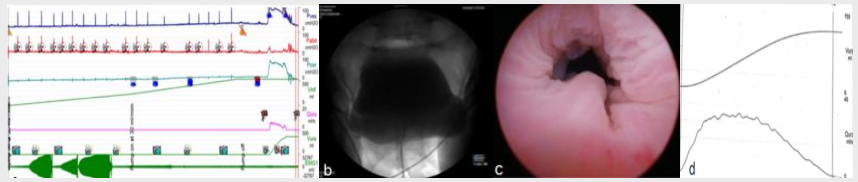


Figure 3a,b,c: PBNO **misdiagnosed as FUSD with history of female urethroplasty** (d) post-BNR uroflow: Qmax of 35 ml/sec ,no incontinence reported

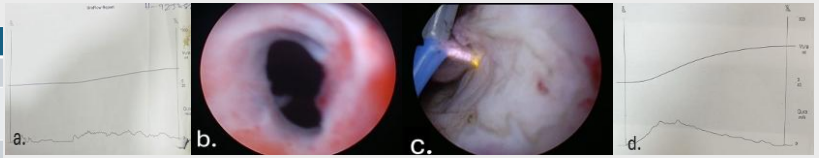


*Figure 4: (a) post BNR UFM at 3 yr follow-up (b) **bladder neck contracture** (c) BNI at 3 & 9 o'clock; (d) post-BNI uroflow: Qmax of 17 ml/sec

Implications

- Long term outcomes of BNI/BNR durable
- Accurate diagnosis (clinical + VUDS) and adequate resection is key
- Prior surgery not a contraindication for BNR
- Poor contractility with impaired compliance risk of incontinence
- Bladder neck contractures are rare and can be managed
- Experience and learning curve reduce re-resections

1. Kalra S et al. Clinical and videourodynamic characteristics in female PBNO and outcomes of bladder neck resection. Urol Ann. 2022;14(2):125–31. 2. Nitti VW. Primary bladder neck obstruction in men and women. Rev Urol. 2005;7 Suppl 8:S12–7.