

MACROPLASTIQUE AND BOTOX ARE SUPERIOR TO MACROPLASTIQUE ALONE IN THE MANAGEMENT OF NEUROGENIC VESICoureTERIC REFLUX IN SPINAL CORD INJURY POPULATION IN PRESUMED HEALTHY BLADDERS.

Hypothesis / aims of study

Vesicoureteric reflux (VUR) is a well-known complication of neurogenic lower urinary tract dysfunction. It is usually secondary to high bladder pressures and differs aetiologically from primary VUR, which is usually seen in the paediatric population. Left untreated VUR may cause renal deterioration and eventually renal failure. Many studies have confirmed that VUR is not always simultaneous to involuntary detrusor contraction. Salinas et al., suggested that in long standing secondary VUR, it is possible that the anti-reflux mechanism is damaged and the reflux becomes primary¹.

Surgical correction, the golden standard for VUR management, has become less popular with the introduction of bulking injections. There are data to confirm that Macroplastique is effective in the treatment of secondary VUR due neurogenic bladder². There is also evidence that botulinum toxin alone is effective in improving VUR³.

The aim of this study is to assess the efficacy of Macroplastique alone or in combination with Botox, in managing VUR in spinal cord injury (SCI) population and correlate the pre-and post-injection urodynamic findings with the outcome.

Study design, materials and methods

We conducted a retrospective case control study of all SCI patients with unilateral or bilateral VUR who were managed with Macroplastique injection. We identified those with SCI related VUR with presumed healthy bladders defined as having low filling detrusor pressure (<30cmH₂O), low amplitude overactivity, good capacity (>200mls) and compliance (>10ml/cmH₂O). The outcomes were recorded in prospective database over a 10-year period. The inclusion criteria were: age>18 years, no previous interventions for neurogenic overactivity, upper motor neuron lesion, baseline and follow-up videourodynamics (VUDS) assessment, proven VUR, adequate follow up (≥12 months) and at least 2 post-intervention annual ultrasonographic assessments of urinary tract.

The primary end point was the overall treatment rate of VUR at 3 months and the secondary outcomes were the success rate (treated+improved) and the comparison of urodynamic parameters (pre-and post-injection). Data was retrieved from patient records, operation notes, clinical follow-ups and urodynamic traces.

The statistic software SPSS 21.0 was used. Inferential statistics used for demographic characteristics and baseline calculations. The t-test was used for the intra-group variability and the non-parametric Mann-Whitney test to assess the variability between the two groups.

Results

74 SCI patients were identified who had either undergone unilateral or bilateral Macroplastique procedure. We studied 34 (45.9%) intervention-naïve patients who fulfilled the inclusion criteria. 19 patients had only Macroplastique injection (Group 1) and 15 had Macroplastique and botulinum toxin injections (Group 2). In total, there were 44 refluxing ureteric units (26 (59.1%) in Group 1 and 18 (40.9%) in Group 2. Before intervention 8/19 from Group 1 and 6/15 patients from Group 2 were on regular anticholinergics. The demographic characteristics and the baseline VUDS of both groups did not show any statistical significant differences.

The overall treatment rate was 65.4% for group 1 and 88.9% for group 2 since 17/26 and 16/18 ureteric units respectively showed complete resolution of VUR (p=0.029). The overall success rate (treated + improved) was 80.8% and 94.4% respectively (p=0.123). The results were similar at 12 months follow up. Group 1, had 4 (15.4%) ureteric units downgraded and 5 (19.2%) that failed; Group 2, had 1 ureteric unit (5.5%) downgraded and 1 failure. The patients who initially failed and 2 who downgraded underwent augmentation ileocystoplasty with complete resolution of VUR. 1 also underwent a concomitant ureteric reimplantation. Three of those who had partial improvements underwent a second injection with curative intent, which was successful.

The comparison of follow up VUDS parameters showed a statistically significant rise in the detrusor pressure of group 1 (34.04 cmH₂O vs 19.2 cmH₂O, p=0.008) and a drop in compliance (19.8 mls/cmH₂O vs 26.3 mls/cmH₂O, p=0.018) as compared to baseline. There were no statistical significant changes in VUDS parameters of Group 2. There were no immediate postoperative complications

Interpretation of results

In this data analysis, we demonstrated that the combination of Macroplastique and botulinum toxin injections is superior to Macroplastique alone for the treatment of secondary VUR in SCI population. To our knowledge, this is the first study that focuses specifically on presumed healthy neurogenic bladders and it is the first comparative study of Macroplastique and botulinum toxin injection versus Macroplastique alone

The combination group had an overall treatment rate 88.9%, while macroplastique alone cured 65.4% ($p=0.029$). There was no significant difference in overall success rates (94.4% vs. 80.8%, $p=0.123$). The results were maintained at 12 month follow up and there were no recurrences in either group..

Concluding message

The combination of Botulinum toxin and Macroplastique is more effective than Macroplastique alone in the management of secondary VUR due to neurogenic bladder in presumed healthy bladders.

References

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Disclosures

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