| Author Year; Country<br>Score<br>Research Design<br>Total Sample Size | Methods | Outcome |
|---|---|---|
| Overgoor et al. 2015;<br>The Netherlands<br>Case series<br>Level 4<br>N=30 | **Population**: 30 low spinal lesion (T12 (incomplete) to sacral) patients (mean age=29.5 years, range=13-59 years), 13 with spina bifida and 17 with a spinal cord injury.<br><br>**Treatment**: Researchers wanted to test whether self-report of reflex erections (RE) or bulbocavernosus reflex (BCR) testing was sufficient to determine whether patients should have unilateral or bilateral (surgery) to maximize sexual function.<br><br>**Outcome Measures**: The integrity of the sacral-reflex-arc and DNP function was tested pre-operatively using bilateral needle electromyography (EMG)–bulbocavernosus reflex (BCR) measurements, and an interview about reflex erections (RE) ability. | 1. Neither Self-report of RE nor BCR testing can independently predict which surgery protocol should be used (7 patients reported RE, 4 of which had positive bilateral BCR; 9 patients had positive BCR, 4 of which had RE.)<br>2. No significant association between BCR function and RE. |
| Overgoor et al. 2014<br>The Netherlands<br>Case series<br>Level 4<br>N=40 | **Population**: 40 low-spinal lesion men with no penile but intact groin sensation<br><br>**Methodology**: The "TOMAX" (TO MAX-imize sensation, sexuality, and quality of life) procedure restores genital sensation in men with low spinal lesions, improving sexual health, as shown previously. It connects the dorsal nerve of the penis to the intact ipsilateral ilioinguinal nerve, unilaterally or bilaterally. This study reports on the technical aspects based on 43 TOMAX nerve transfers. 43 nerve transfers were performed on the participants.<br><br>**Outcome Measures**: Data on patient selection, surgical history, anatomy of the ilioinguinal nerve and dorsal nerve of the penis, unilateral or bilateral surgery, surgical technique, complications, and patient information were collected prospectively. | 1. Regardless of origin, all patients with no penile but good groin sensation are eligible for the procedure, provided the ilioinguinal nerve is not damaged because of former inguinal surgery or absent because of anatomical variations.<br>2. Selection of a unilateral or bilateral procedure depends on the presence or absence of reflex erections and bulbocavernosus reflex.<br>3. Preliminary experience with the first three bilateral cases shows that it is technically feasible, with encouraging results. The surgical technique has evolved (described in detail, including video) to enhance outcome and reduce complications.<br>4. The TOMAX procedure can then be used to restore erogenous penile sensation and improve the quality of sexual health in patients with absent penile but good groin sensation. |
| Kim et al. 2008;<br>Korea<br>Case series<br>Level 4<br>N=48 | **Population:** 48 participants with SCI and erectile dysfunction, mean age 58.9 (range 39-74).<br>**Treatment:** malleable penile prosthesis insertion.<br>**Outcome Measures:** Subjective satisfaction questionnaire; possibility of intercourse. | 1. 38 (79.2%) of the participants reported some degree of satisfaction with their prosthesis.<br>2. Intercourse was possible in 44 participants.<br>3. Complications occurred in 8 participants: 4 had infections, 2 had erosion towards the urethra and glans, 1 experienced pain due to the insertion of an overly large prosthesis, and 1 was dissatisfied with the small size of the inserted prosthesis. |

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| Zermann et al. 2006;<br>Germany<br>Case series<br>Level 4<br>N=245 | **Population:** Men with neurological impairment, n=197 with SCI; Age: mean 40.8 yrs, range 17-75; Injury level: paraplegia (n=188), tetraplegia (n=57); Diagnostic groups: urinary management (n=134), erectile dysfunction (ED) (n=60), urinary management and ED (n=51).<br>**Treatment:** Penile prosthesis: semirigid Jonas (n=147), self-contained inflatable AMS Hydroflex or AMS Dynaflex (n=113), and inflatable 3-piece AMS 700 CX (n=33).<br>**Outcome Measures:** Sexual intercourse success, treatment satisfaction, secure condom fixation, urinary management, adverse events. | 1. Sexual intercourse was possible in 83.7% of individuals with penile prosthesis for ED.<br>2. 67% of female were satisfied with result of their partner's treatment.<br>3. Adverse events: infection rate 5%, perforation rate 18.1% (semi-rigid Jonas), 2.4% (self-contained inflatable Dynaflex), and 0% (inflatable 3-piece AMS 700), respectively. |
| Gross et al. 1996;<br>Germany<br>Case series<br>Level 4<br>N=209 | **Population:** Men with SCI; Age: mean 39.9 yrs, range 16-72; Injury level: paraplegia (n=128), tetraplegia (n=38); Impairment: erectile dysfunction (n=49), penile retraction (n=113), both (n=47).<br>**Treatment:** Penile prosthesis.<br>**Outcome measures:** Use of prosthesis, satisfaction with sexual intercourse, adverse events. | 1. Use of prosthesis: 83 out of 96 men with ED used prosthesis at 5 yrs after surgery.<br>2. Satisfactory sexual intercourse was reported by 84% of men with ED.<br>3. Adverse events: perforation in 7% of men: 9.4% occurred with semi-rigid prosthesis vs 2.7% of semi-flexible prosthesis, infection in 5.6% leading to removal of prosthesis. |
| Collins & Hackler 1988;<br>USA<br>Post-test<br>Level 4<br>N=63 | **Population: 63 men with SCI.**<br>**Treatment:** Penile implantation of semi-rigid device or Mentor inflatable prosthesis.<br>**Outcome Measures:** Penile implantation functionality. | 1. 53 patients with a semi-rigid implant, 44 currently have functional prosthesis (83% overall success rate).<br>2. 10 patients received inflatable penile prostheses: 4 were lost, 2 had successful reimplantation.<br>3. Overall complication rate in the 63 patients=33% (lost prosthesis).<br>4. After reimplantation, 52/63 patients had functional device, resulting in 82% ultimate success rate. |
| Iwatsubo et al. 1986;<br>Japan<br>Case series<br>Level 4<br>N=37 | **Population:** Men with SCI, Age: mean 42 yrs, range 21-63, Injury level: tetraplegia (n=10), paraplegia (n=23), cauda equina lesions (n=4).<br>**Treatment:** Shirai-type silicone implants; follow up from 6-46 months.<br>**Outcome measures:** Impact on sexual function, adverse events. | 1. Impact on sexual function: 15 (41%) men reported improvement, 18 (48%) men reported no sexual benefit, 4 (11%) men were dissatisfied.<br>2. Adverse events: extrusion of prosthesis due to infection (n=2) and removal due to causalgia in LE (n=1), posterior migration of prosthesis (n=1). |
| Green & Sloan 1986;<br>USA<br>Observational<br>Level 5<br>N=40 | **Population:** 40 men; Age range: 21-60 yrs, Impairment grade: AIS A (n=31), B-D (n=9).<br>**Treatment**: Penile prosthesis.<br>**Outcome Measures:** Sexual questionnaire. | 1. 31 patients have intercourse regularly and pleased with decision to have device.<br>2. 4 patients dissatisfied all had semi-rigid implant. |