

Author Year; Country Score Research Design Total Sample Size	Methods	Outcome
<p>Overgoor et al. 2013; The Netherlands Pre-post Level 4 N=30</p>	<p>Population: 30 men (SCI n=12, Spina bifida n=18) with no penile sensation but good groin sensation. Treatment: TOMAX (TO MAX-imize sensation, sexuality and quality of life) procedure that involved microsurgical connection of the sensory ilioinguinal nerve to the dorsal nerve of the penis unilaterally. Outcome measures: sensitivity testing, bulbocavernosus testing, Hospital Depression and Anxiety Scale (HADS), Symptom Checklist (SCL-90-R), Groninger Arousalability Scale (GAS), Visual Analogue Scale (VAS).</p>	<ol style="list-style-type: none"> 1. Participants became more sexually active with their partners and with more satisfaction. 2. Postoperative (11-24 months) glans sensation increased from absence to having sensations. 3. All patients retained the preoperative ability to have an erection and ejaculations. 4. Participants reported having more open and meaningful sexual relationships with their partners.
<p>Courtois et al. 2011; Canada Cohort Level 2 N=89</p>	<p>Population: Men who achieved ejaculation with (n=50) or without (n=39) experiencing autonomic dysreflexia (AD). Treatment: Ejaculation was obtained through natural stimulation, vibrostimulation or vibrostimulation combined with midodrine (5-25 mg). Outcome measures: Questionnaire inquiring about the physiological responses related to orgasm to test the hypothesis that orgasm is related to AD in individuals with SCI.</p>	<ol style="list-style-type: none"> 1. Significantly more sensations were described at ejaculation than with sexual stimulation alone. 2. Men with SCI who experienced AD at ejaculation reported significantly more cardiovascular, muscular, autonomic and dysreflexic responses than those who did not.
<p>Borisoff et al. 2010; Canada Pre-post Level 4 N=3</p>	<p>Population: 3 males (mean age = 38, range 34-42) with SCI ≥ 1 year. Treatment: Sexual self-stimulation while using a novel sensory substitution device that mapped the stroking motion of the hand to a congruous flow of electrocutaneous sensations on the tongue. Erection-enhancing drugs administered as needed. Outcome measures: Solitary Masturbation Orgasm Questionnaire (Mah and Binik); SCI Ejaculation Questionnaire (Courtois et al.); Sexual Sensations Questionnaire (SSQ).</p>	<ol style="list-style-type: none"> 1. Each participant reported an increased level of sexual pleasure compared to baseline after a few training sessions. 2. No difference found on the ejaculation questionnaire scores.
<p>Soler et al. 2008; France Pre-Post Level 4 N=158</p>	<p>Population: 158 participants with SCI who failed to ejaculate from penile vibratory stimulation (PVS). Treatment: Oral midodrine, starting at 7.5mg in participants with tetraplegia and 15mg with paraplegia. Outcome Measures: Ejaculation; orgasm.</p>	<ol style="list-style-type: none"> 1. With midodrine, ejaculation was obtained in 102 men (64.6%). 2. 93 (59%) participants reported orgasm with both midodrine and PVS, compared to 14 patients with only PVS. 3. Participants with upper motor neuron injury and incomplete lesions experienced significantly more often orgasm.
<p>Courtois et al. 2014</p>	<p>Population: 34 males (mean age= 41 years, age range= 19-65 years) with SCI who have been consulted for sexual dysfunctions over the past 20 years, lesions varied from L5-S1</p>	<ol style="list-style-type: none"> 1. 31/33 patients maintained natural ejaculations, but 18 complained of premature ejaculation (PE) and five of spontaneous ejaculations.

Author Year; Country Score Research Design Total Sample Size	Methods	Outcome
<p>Canada Retrospective Study Level 5 N=33</p>	<p>and S4-S5, average delay since injury= 10 years</p> <p>Treatment: None</p> <p>Outcome Measures: Occurrence of psychogenic and reflexogenic erection and ejaculation since injury, and test for perineal reflexes (bulbocavernosus reflex, anal reflex, cremasteric reflex)</p>	<ol style="list-style-type: none"> 14 patients complained of dribbling ejaculation, and 27 of non-climactic ejaculation (13 no sensation, 10 some sensation, 4 painful sensation). Medical assessments showed absent or diminished anal sensation in 28 patients, absent or diminished anal reflexes in 21, absent or diminished bulbocavernosus reflexes in 20, but 12/13 positive cremasteric reflex. Urodynamics showed 12/20 areflex and 2/20 hyperactive bladders
<p>Soler et al. 2016 France Post test Level 4 N=33</p>	<p>Population: 33 males with anejaculation during sexual stimulation; mean age=29.0±9.1 years; mean time since the onset of the neurological disorder was 6.6±6.4 years; 19 have complete motor lesion (AIS A or B), 1 had incomplete motor lesion (AIS C).</p> <p>Treatment Penile vibratory stimulations were carried out following bladder catheterization and instillation of a pink buffering medium (Ferticult) and then PVS. If they failed to ejaculate, PVS was combined with oral midodrine 5mg up to 30mg until the patient ejaculated. The urethra was then milked manually to ensure that as much semen as possible was collected. Two-step catheterization was then performed: a catheter was inserted through the urethral sphincter into the prostatic urethra to aspirate its content, and then bladder catheterization was performed to collect the Ferticult. The procedure was repeated in some patients after at least 1 week.</p> <p>Outcome Measures: Type of ejaculation, quality of sperm, antegrade/retrograde fraction, prostatic urethra fraction, motility, viability, and pH of sperm.</p>	<ol style="list-style-type: none"> A total of 42 trials were obtained from 22 patients. Sperms were found in the prostatic urethra in 21 samples (50%) from 12 patients (11 with spinal cord injury, 1 with diabetes). The colour of all 21 prostatic urethra sperm samples differed from the Ferticult. Sperm motility was greater in 8 samples, sperm count was higher in 10 and pH was different in 10, compared with the bladder samples. The higher overall quality of the sperm allowed cryopreservation in 10 prostatic urethra samples compared with only 5 bladder samples. Four of the five patients who underwent repeated trials had a reproducible pattern of prostatic urethra ejaculation The presence of sperm in the prostatic urethra most probably results from 'ejaculation dyssynergia', a lack of coordination between bladder neck and external sphincter. Sperm from the prostatic urethra should be systematically sought to improve the outcome of assisted reproduction.
<p>Leduc et al. 2015; Canada RCT Level 1 PEDRO=8/11 N=20</p>	<p>Population: 20 men with traumatic SCI (level C4-T9) of at least one year duration, and anejaculation.</p> <p>Treatment: Participants were randomized into two groups, Group M and Group P where group M received an oral administration of flexible sham-midodrine (7.5-22.5 mg max) followed by PVS, and group P received oral administration of (placebo) followed by PVS. Intervention</p>	<ol style="list-style-type: none"> Treatment of anejaculation after SCI with midodrine and PVS did not result in a better rate of antegrade ejaculation in 10 men than in 10 men treated with a placebo and PVS. One participant (10%) from group M reached ejaculation and two participants (20%) from group P reached ejaculation. Autonomic dysreflexia occurred in three patients (none of which ejaculated) during PVS.

Author Year; Country Score Research Design Total Sample Size	Methods	Outcome
	<p>occurred once a week for a maximum of 3 weeks or until ejaculation occurred.</p> <p>Outcome Measures: Ejaculation, and measurement of AD.</p>	
<p>Castle et al. 2014 United States Case series Level 4 N=30</p>	<p>Population: 30 anejaculatory males with SCI who were unable to ejaculate by sexual intercourse or masturbation, level of injury T10 and rostral.</p> <p>Treatment: The Viberec-X3 (Reflexonic, Frederick, MD, USA) was applied to 30 consecutive anejaculatory men with SCI whose level of injury was T10 and rostral. All patients received one trial of penile vibratory stimulation (PVS) with Viberec-X3. All patients were familiar with PVS and had been administered one or more previous trials with an alternate device. Prior to PVS, participants whose level of injury was T6 or rostral were administered 10–40mg nifedipine sublingually to manage autonomic dysreflexia. Viberec-X3 was administered.</p> <p>Outcome Measures: Ejaculatory success rate, time to ejaculation, volume of ejaculate, blood pressure, adverse events.</p>	<ol style="list-style-type: none"> 1. The ejaculatory success was 77% (23/30) slightly lower than previously published PVS success rates. 2. No adverse events occurred, and there were no malfunctions of the device.