Injectable biomaterials

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Injectable biomaterials to add bulk to the anal canal and thereby augment faecal continence were first introduced by Shafik, who injected polytetrafluoroethylene paste into the anal submucosa. The ideal agent should be biocompatible, easy to deploy and should not migrate. Many materials have been investigated. ® Recently the SphinKeeper (Ratto) has been shown to restore sphincter function through placement of self-expanding prostheses into the intersphincteric space, adding bulk to the sphincter complex (Figure 80.13). Sacral nerve stimulation (SNS) is a novel tech nique that uses low-voltage electrical stimulation to the S3 or S4 nerve roots to augment continence (Figure 80.14 Ahmed Shafik , 1933–2007, surgeon, Cairo University , Cairo, Egypt. Carlo Ratto , contemporary , surgeon, Gemelli University Hospital, Rome, Italy . Klaus E Matzel , contemporary , surgeon, University of Erlangen, Erlangen, Germany . thought to work primarily by activation of autonomic sensory pathways in patients with pelvic neuropathy , which principally screening occurs after childbirth. The technique consists of a phase of peripheral nerve evaluation, followed by a therapeutic phase of permanent neurostimulator implantation (Matzel) (Figure 80.15). SNS is sustainable with long-term improve - ment in symptoms. Postoperative complication rates are low; however, infection or loss of e ffi cacy may require device explan - tation. Percutaneous posterior tibial nerve stimula - tion (PTNS) is a less expensive neuromodulation technique; - however, results from prospective studies suggest only modest improvement in outcome.). It is

Figure 80.13 Endoanal ultrasonography evaluation of a surgically ® placed expandable sphincter prosthesis ‘SphinKeeper ’ (circle) radially within the intersphincteric space. (Courtesy of Dr Alison Corr, Consultant Radiologist, St Mark’s Hospital, London, UK). 60° 90° Figure 80.14 Diagram showing placement of the electrode through a sacral foramen.

Figure 80.15 Radiograph of sacral nerve stimulation electrode place ment in the line of the S3 root. The implanted nerve stimulator is visible in the gluteal area. (Reproduced with permission from O’Connell PR, Madoff RD, Solomon MJ (eds). Operative surgery of the colon, rectum and anus , 6th edn. Boca Raton, FL: CRC Press, 2015.) Stimulator implanted in the abdominal wall Electrode plate Nerve to gracilis Gracilis muscle Distal gracilis tendon Anal canal wrapped around /f_i xed to contralateral anus ischial tuberosity Figure 80.16 The electrically stimulated gracilis neosphincter or dynamic graciloplasty.

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