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Minimally Invasive Urological Procedures and Related Technological Developments

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The landscape of minimally invasive urological intervention is changing. A lot of new innovations and technological developments have happened over the last 3 decades. Laparoscopy and robotic surgery have revolutionised kidney and prostate cancer treatment, with more minimally invasive procedures now being carried out than ever before. At the same time, technological advancements and the use of laser have changed the face of endourology. Several new innovative treatments are now commonplace for benign prostate enlargement (BPE).

Management of prostate cancer now involves procedures such as robotic prostatectomy, brachytherapy, radiotherapy, cryotherapy and HIFU. Robotic partial nephrectomy and cryotherapy have changed the face of renal cancer. En-bloc resection of bladder cancer is challenging the traditional management of non-muscle invasive bladder cancer and becoming commonplace, while robotic cystectomy is also gaining popularity for muscle invasive bladder cancer.

Newer surgical intervention related to BPE includes laser (holmium, thulium and green light), water-based treatment (Rezum, Aquablation) and other minimally invasive procedures such as prostate artery embolisation (PAE) and Urolift. Endourological procedures have incorporated newer laser types and settings such as moses technology, disposable ureteroscopes (URS) and minimisation of percutaneous nephrolithotomy (PCNL) instruments. All these technological innovations and improvements have led to shorter hospital stay, reduced cost, potential reduction in complications and improvement in the quality of life (QoL).

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