

health  
**technology**  
assessment



EXECUTIVE  
SUMMARY

MINIMAL ACCESS  
SURGERY

HEALTH TECHNOLOGY ASSESSMENT UNIT  
MEDICAL DEVELOPMENT DIVISION  
MINISTRY OF HEALTH  
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## EXECUTIVE SUMMARY

Minimal access surgery or laparoscopic surgery involves the visualization of the internal organs and structures through a laparoscope. This technique involves using carbon dioxide gas to distend the abdominal cavity which replaces the mechanical retraction in conventional surgery and laparoscopic imaging, as well as surgical instruments being introduced through multiple punctures of the abdominal wall. The operation is viewed on a video screen with magnification while it is being carried out.

In the last decade, laparoscopic surgery has been increasingly performed in both gynaecology and general surgery

The objective of this study is to assess the safety, effectiveness and cost effectiveness of laparoscopic surgery, which includes minimal access surgery in orthopaedics, laparoscopic cholecystectomy, percutaneous nephrolithotomy, ureteroscopy, laparoscopic herniorrhaphy, laparoscopic assisted vaginal hysterectomy, laparoscopic cystectomy, laparoscopic surgery for ectopic pregnancy, laparoscopic appendectomy and laparoscopy in children.

In orthopedics, from the evidence gathered both Microdiscectomy and thoracoscopic anterior release in Scoliosis are not vastly superior to open discectomy and thoracotomy anterior release respectively. However, it is suggested these newer techniques should be encouraged, with opportunities being offered to individual surgeons who wish to pursue such training.

The evidence show significant advantages of laparoscopic surgery over open cholecystectomy, like shorter hospital stay, earlier return to work, and less post operative pain. However, the duration of laparoscopic surgery is longer. Ductal stones are now safely and effectively approached by a single stage laparoscopic technique

In the management of staghorn calculi in the kidney, percutaneous nephrolithotomy is recommended, where there is a high success rate with low incidence of complications. Extracorporeal short wave lithotripsy and repeat Percutaneous Nephrolithotomy may be used as secondary procedures.

Based on the evidence obtained, it is recommended that uroteroscopy be the treatment of choice for the removal of distal, mid and proximal ureteral calculi and. It is also safe and efficacious for children below 10 years and for treatment of stones during pregnancy without using flouroscopy. Ureteroscopic ureterotomy can be done safely with minimal morbidity and high long-term patency success rate. Patient with single kidney, ureteral or urothelial tumours could be managed by ureteroscopic ablation of these tumors, thus conserving the kidney.

Laparoscopic hernia repair seems promising but it involves additional cost, requires equipment and retraining of the surgeons. Its long term efficacy and safety remains to be elucidated.

As for laparoscopic assisted vaginal hysterectomy(LAVH), evidence shows that it is safe and cost effective when vaginal hysterectomy is not suitable, with minimal complications when performed by an experienced laparoscopist, although the operating time is longer, However vaginal hysterectomy is the best procedure and more cost effective than laparoscopic assisted vaginal hysterectomy.

The evidence shows that the treatment of choice for cystectomy is laparoscopy, which is safe , effective, with reduced hospital stay and costs to both the patients and hospital. The operation time is comparable to laparotomy and complications are minimal.

In the treatment of ectopic pregnancy, most studies concluded that laparoscopic is a safe, and effective procedure. It had advantages over laparotomy in terms of reduced hospitalization, faster recovery, and lower health services costs.

Laparoscopic appendicectomy was shown to be a safe and effective alternative to open appendicectomy. However, it involves higher cost.

With regards to minimal invasive surgery in children, from the evidence obtained, it was found that laparoscopic orchidopexy is safe and useful for localisation of non-palpable testes. The laparoscopic technique is recommended for bilateral impalpable testes and open inguinal exploration for unilateral impalpable testes. For laparoscopic cholecystectomy, appendicectomy, Nissen Fundoplication, there are studies indicating that they are safe and effective in children. However, numbers in these studies are small, thus there is inadequate evidence to recommend these procedures