Minimally invasive surgery in India

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GEM Hospital and Research Centre

Coimbatore

Background

- In late 80s and early 90s, Health care in India was not as developed
- All innovations, made in west took few years to reach
- Private Health care had not evolved in India
- Dependence on surgeons trained abroad for advanced health care
- Few publications in reputed journals

Evolution of the people and disease profile

- Infectious disease to lifestyle disease and cancers
- Economic status improved
- Larger proportion of the People could afford quality health care
- Health awareness increased as literacy increased
- Still a large percentage of the population could not afford

Rural India

Modern India

The Laparoscopic Revolution

- GEM Hospital lead the Laparoscopic revolution
- Necessitated by the needs of the patients
- Poor peasants and mill workers who cannot afford long break
- Laparoscopy was a boon to such people
- Early recovery, Less pain, Early to work
- Cost Effective

Our Mission

- Laparoscopy for “ALL”
- ALL- Diseases
- ALL- Surgeons
- ALL- People

Evolution of our Clinical Work

- From 10 laparoscopic surgeries/month to 750 laparoscopic surgeries/month
- From simple Cholecystectomy to the most complicated Laparoscopic Pancreaticoduodenectomies and Esophagectomy

Pioneering Work Esophagus

- Thoraco-laparoscopic Esophagectomy
- In prone position
- Second largest series

Vol. 203, No. 1, July 2006

Minimally Invasive Esophagectomy: Thoracoscopic Mobilization of the Esophagus and Mediastinal Lymphadenectomy in Prone Position—Experience of 130 Patients

Chinnusamy Palanivelu, MS, MCh, FRCS (Ed), FACS, Anand Prakash, MS, DNB, FNB (MAS),

Esophagectomy in Prone Position – Advantages

- Two-lung ventilation is possible
- Port placement favors ergonomy
- Heart & lung fall away due to gravity –unprecedented amount of space available for dissection
- Identification of recurrent laryngeal nerves easy
- Much less chance for thoracic duct injury

Pioneering Work Esophagus

- Best video award
  - 16th European Association of Endoscopic Surgeons Congress Stockholm , Sweden, 2007
  - American college, San Francisco, 2005

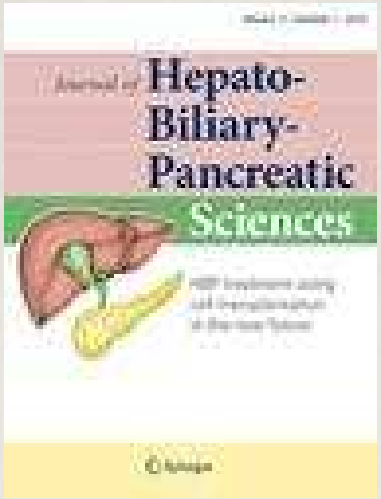
Pioneering Work Esophagus

- Live workshop:
  - 7th Asia Pacific Congress of Endoscopic Surgery (ELSA 2005), Hongkong,2005
  - Annual Meeting of AUGIS (Association of Upper GI Surgeons of UK), Liverpool, 2008.
  - Oesophago-gastric symposium, minimal access training centre (MATTU) Dec 2008, Gilford London
  - Live telesurgery transmission from GEM Hospital to UK, Saudi Arabia etc.,

- 9th World Congress 2008 on Esophagus, Monaco: Luketich (Pittsburgh), Cadiere (Belgium), Uyama (Japan) & Dulucq (France) – adapted our technique

Pioneering Work - Pancreas

- Laparoscopic Pancreaticoduodenectomy(LPD)
- Largest series of LPD



J Hepatobiliary Pancreat Surg
DOI 10.1007/s00534-009-0157-8

TOPICS Evolution and challenge in endoscopic HBP surgery

Evolution in techniques of laparoscopic pancreaticoduodenectomy: a decade long experience from a tertiary center

C. Palanivelu · P. S. Rajan · M. Rangarajan · V. Vaithiswaran · P. Senthilnathan · R. Parthasarathi · P. Praveen Raj

Table 1
Short-term outcomes of laparoscopic pancreaticoduodenectomy

Author	Number of Patients	Operative Details	Conversion	Diagnosis	Operative Time (Min)	Length of Stay (Days)	Complication Rate
Gagner et al, 1997	10	Laparoscopic pylorus-preserving PD	40%	Pancreatic adenocarcinoma–4 Ampullary cancer–3 Chronic pancreatitis–2 Cholangiocarcinoma–1	510	22.3	50%
Giulianotti et al, 2003	8	Robot-assisted PD	12.5%	Pancreatic adenocarcinoma–3 Mucinous cystadenoma–2 Cholangiocarcinoma–2 Ampullary carcinoma–1	490	NR	37%
Dulucq et al, 2006	22	13 total laparoscopic 9 laparoscopic-assisted	13.6%	Pancreatic adenocarcinoma–11 Ampullary cancer–3 Chronic pancreatitis–2 Duodenal adenocarcinoma–2 Other–4	287	16.2	32%
Palanivelu et al, 2007	42	Laparoscopic pylorus-preserving PD	0%	Ampullary Ca–24 Pancreatic adenocarcinoma–9 Pancreatic cystadenoma–4 Cholangiocarcinoma–3 Chronic pancreatitis–2	370	10.2	31%
Pugliese et al, 2008	19	6 total laparoscopic 7 laparoscopic assisted	31%	Pancreatic adenocarcinoma–11 Ampullary carcinoma–4 Cholangiocarcinoma–3 Mesenchymal tumor–1	461	18	37%

Abbreviations: Ca, cancer; PD, pancreaticoduodenectomy.

Surgical Clinic of North America Volume 89, Issue 1, (Feb 2009)

Pioneering Work - Pancreas

- Silver medal at 1st International video
  - •Olympics at Phoenix, 2009 (JSES&SAGES)
- Best Video Award
  - •ACS Annual conference, New Orleans,2007
- Invited author for ACS multimedia book,2009
- Live workshops - U.K, INDIA

Gastrectomy

- D1 lymphadenectomy – 1996
- D2 lymphadenectomy – 2001
- 2005 SAGES Award for ‘Outstanding Video’
- 2007 ACS ‘Outstanding Video’ in the International Video Session in New Orleans
- Japanese Society of Endoscopic Surgery - guest faculty for ‘Keynote Address on Gastric Cancer’ during 20th Annual Congress, Kyoto, 2007

Colorectal Cancer

Int J Colorectal Dis (2007) 22:367–372
DOI 10.1007/s00384-006-0165-y

ORIGINAL ARTICLE

Laparoscopic anterior resection and total mesorectal excision for rectal cancer: a prospective nonrandomized study

C. Palanivelu · K. Sendhilkumar · Kalpesh Jani · P. S. Rajan · G. S. Maheshkumar · Roshan Shetty · R. Parthasarthi

Colorectal Cancer

SCIENTIFIC PAPER

Laparoscopic Restorative Total Proctocolectomy With Ileal Pouch Anal Anastomosis for Familial Adenomatous Polyposis

C. Palanivelu, MCh, MNAMS, FRCS, Kalpesh Jani, MS, DNB, FNB, MNAMS, K. Sendhilkumar, MS, FICS, R. Parthasarathi, MBBS, P. Senthilnathan, MS, DNB, MRCS, G. Maheshkumar, MS, FICS

GEM Hospital, Tamilnadu, India (all authors).

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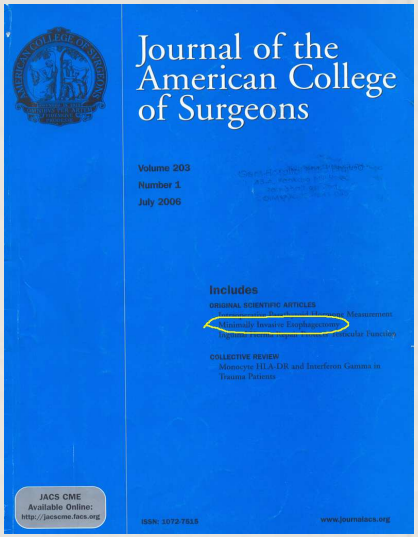
Pioneering Work
- Benign Diseases

ORIGINAL SCIENTIFIC ARTICLES

Laparoscopic Cholecystectomy in Cirrhotic Patients: The Role of Subtotal Cholecystectomy and Its Variants

Chinnasamy Palanivelu, MS, MCh, MNAMS, FACS, FRCS, Pidigu Seshiyer Rajan, MS, FACS, FICS, Kalpesh Jani, MS, DNB, MNAMS, Alangar Roshan Shetty, MS, FICS, Karuppasamy Sendhilkumar, MS, FACS, FICS, Palanisamy Senthilnathan, MS, Ramakrishnan Parthasarthi, MBBS



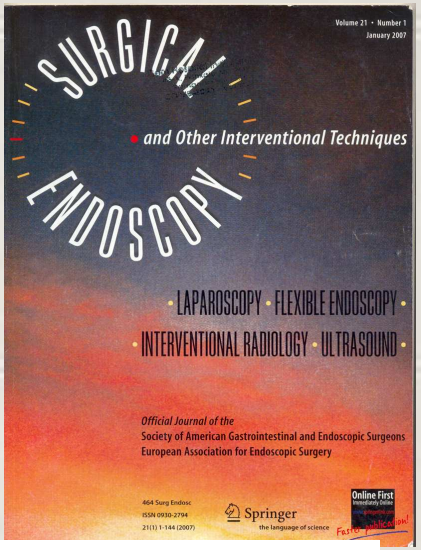
'Outstanding Plenary Lecture' in 5th WSEC, USA

Ventral Hernia

- Suturing of large defects & IPOM
- - pendulous abdomen (Asian)
- - restoration of anatomy
- Mesh fixation:
- - intracorporeal sutures
- - transfascial sutures
- Results published
- - Recurrence rate 0.6% (GEM)
- - Literature evidence 3 - 4%

Palanivelu C et al. Laparoscopic sutured closure with mesh reinforcement of incisional hernias. Hernia 2007;11:223-8

Hydatid Cyst



Surg Endosc (2006) 20: 1909–1913
DOI: 10.1007/s00464-005-0274-7

SURGICAL ENDOSCOPY
and Other Interventional Techniques

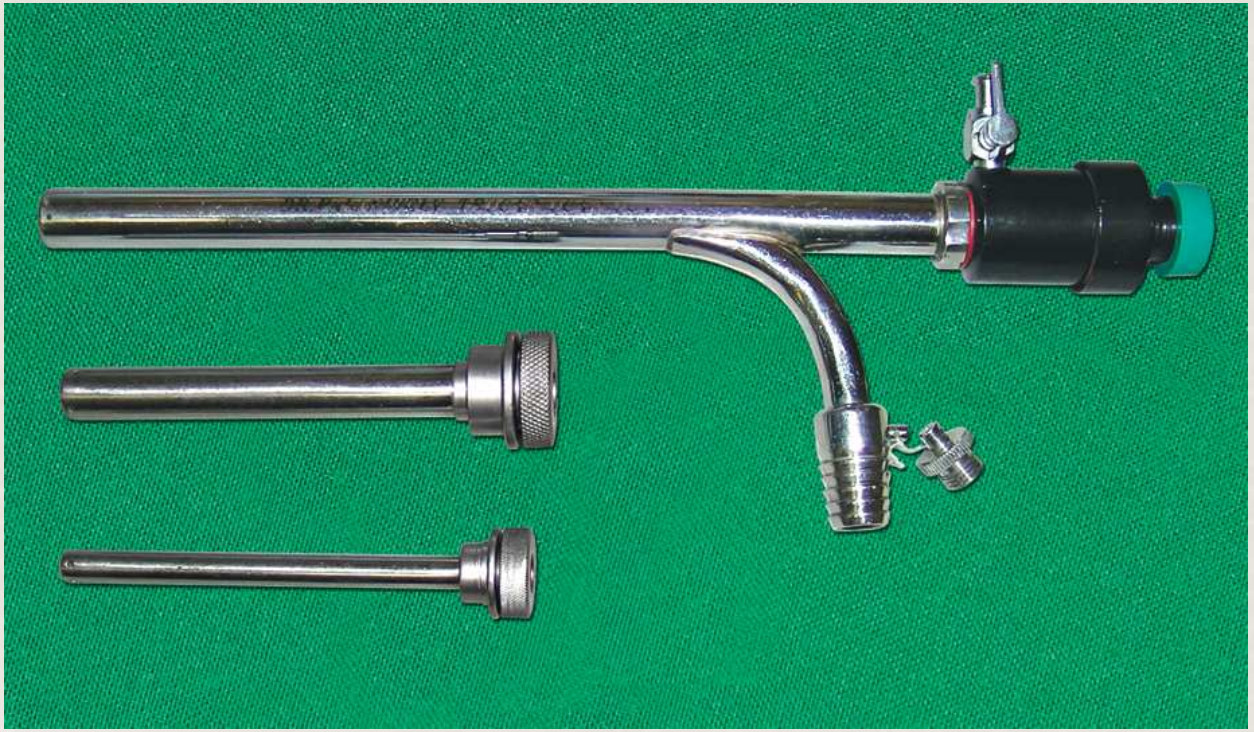
Palanivelu hydatid system for safe and efficacious laparoscopic management of hepatic hydatid disease

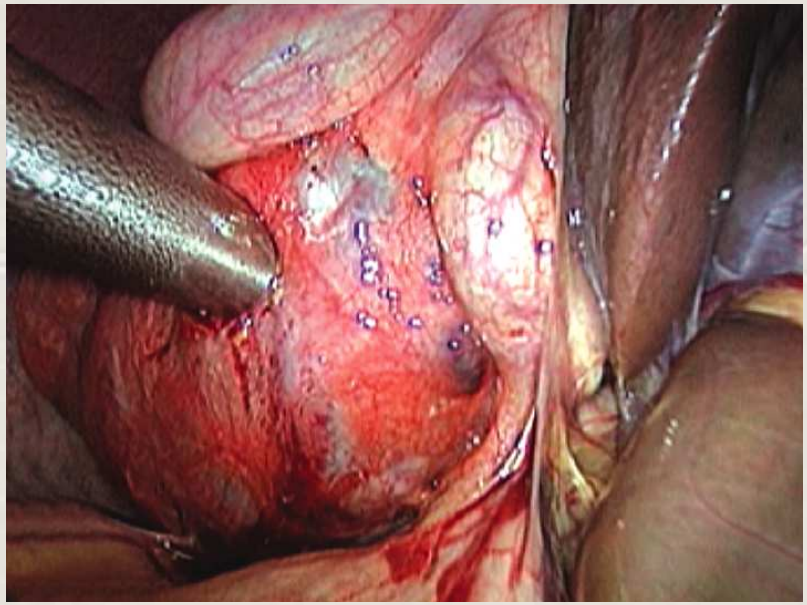
C. Palanivelu, R. Senthilkumar, K. Jani, P. S. Rajan, K. Sendhilkumar, R. Parthasarthi, S. Rajapandian

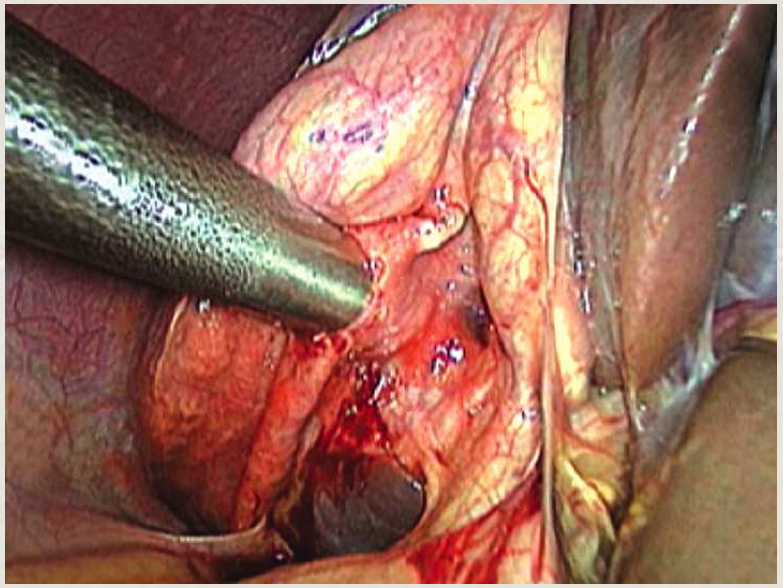
GEM Hospital, 45A, Pankaja Mill Road, Ramanathapuram, Coimbatore, Tamilnadu, 641045 India

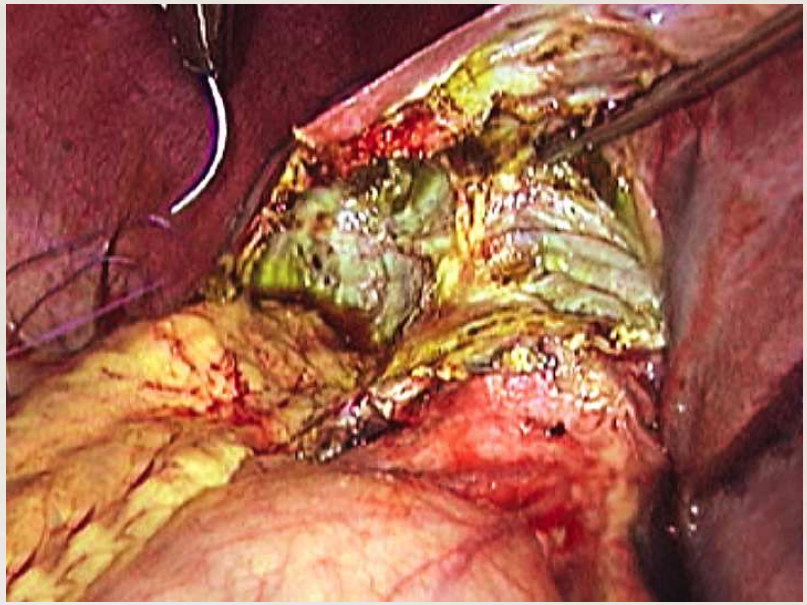
Received: 17 April 2005/Accepted: 31 August 2005/Online publication: 6 September 2006

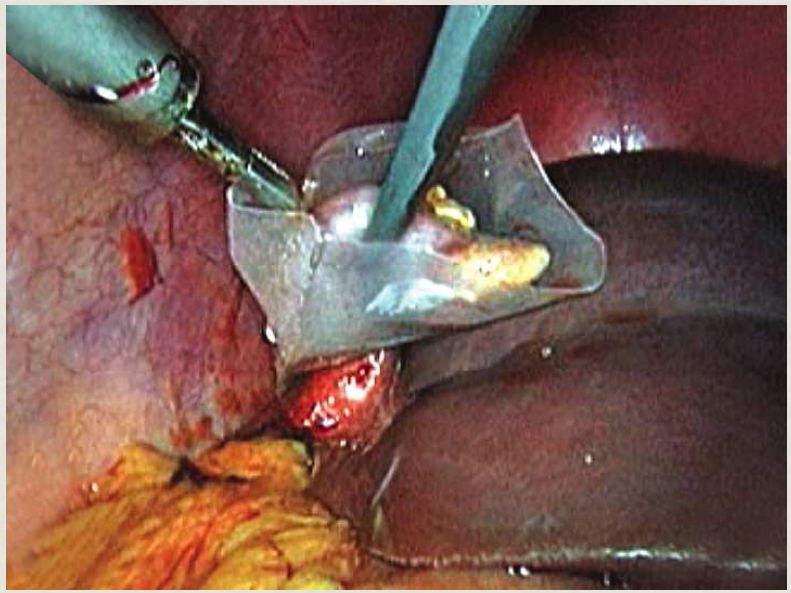
Palanivelu's Hydatid Trocar System



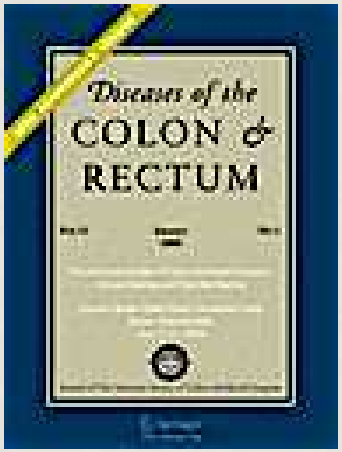








Specimen Extraction



DISEASES OF THE COLON & RECTUM

ORIGINAL CONTRIBUTION

An Innovative Technique for Colorectal Specimen Retrieval: A New Era of "Natural Orifice Specimen Extraction" (N.O.S.E)

Chinnusamy Palanivelu, M.Ch., F.R.C.S. •
Muthukumaran Rangarajan, M.S., Dip.M.I.S. •
Priyadarshan Anand Jategaonkar, M.S., D.N.B., M.R.C.S. •
Natesan Vijay Anand, M.S.

GEM Hospital and Postgraduate Institute, Ramnathapuram, Coimbatore, India

PURPOSE: The common incisions for transabdominal specimen retrieval after laparoscopic colorectal surgery are lower quadrant, midline, or transverse suprapubic incision. This study was designed to evaluate a novel method of specimen extraction after totally laparoscopic proctocolectomies.

METHODS: We retrospectively studied seven women patients from 2004 to 2007. The indication for surgery was familial polyposis coexisting with adenocarcinoma of the upper rectum. A totally laparoscopic proctocolectomy with ileal pouch-anal anastomosis was successfully performed for all cases. The entire specimen was extracted *via* a transvaginal route.

RESULTS: The mean age of the patients was 49.5 years, and mean body mass index was 25.3 kg/m^2. The mean operating time was 222.5 minutes, and average blood loss was 172 ml. The average hospital stay was 25.5 days. Postoperative complications included ileus (n=1), pouchitis (n=1), and deep vein thrombosis (n=1). The vaginal wound had healed completely by the first follow-up. There was no mortality.

CONCLUSIONS: Our technique of transvaginal retrieval effectively prevents wound-related complications by completely eliminating minilaparotomies for specimen retrieval. It could be called "Natural Orifice Specimen Extraction," or N.O.S.E. We stress the need for innovations in specimen extraction, for which importance is not given by surgeons.

KEY WORDS: Laparoscopic proctocolectomy; Malignancy; Transvaginal; Specimen extraction.

Presented at the meeting of the Association of Surgeons of India, Orissa, India, December 25 to 30, 2007.

Address of correspondence: Dr. Chinnusamy Palanivelu, M.Ch., F.R.C.S., GEM Hospital and Postgraduate Institute, 45-A, Pankaja Mill Road, Ramnathapuram, Coimbatore 641045, India. E-mail: drcp@gemhospital.net

Although colorectal procedures are performed laparoscopically, the resected specimen has to be delivered from the peritoneal cavity, and for this reason a minilaparotomy usually is used. This minilaparotomy involves certain morbidity, which can be avoided if it is not used. There are two methods to achieve this: 1) perform a totally laparoscopic procedure, and 2) use a natural orifice for specimen retrieval. Posterior colpotomy was used since the early 20th century but lost its popularity later to laparoscopy.[1–3] There is a renewed interest in this approach, thanks to the introduction of "NOTES." Reports of a totally laparoscopic total proctocolectomy (TPC) with ileal pouch-anal anastomosis (IPAA) for colorectal cancers are still sparse.[4] In this study, we present a small series of patients who underwent TPC + IPAA for familial adenomatous polyposis (FAP) with coexisting carcinoma of the rectum, which was performed totally laparoscopically followed by transvaginal specimen retrieval. Although the transvaginal route has been used for minor procedures in the past,[5] this particular combination of a laparoscopic procedure and technique of specimen retrieval has not been reported previously. This study was designed to evaluate this novel technique of specimen extraction.

MATERIALS AND METHODS

We prospectively studied seven women patients who suffered from FAP coexisting with early adenocarcinoma of the upper rectum from 2004 to 2007 operated on at our institution. Proper informed consent was obtained from the patients after clearance from the hospital Ethics Committee. They were all married and had completed their families. All the patients underwent elective surgery: totally laparoscopic proctocolectomy with endostapler ileal pouch-anal anastomosis followed by transvaginal specimen extraction. The presenting symptoms were loss of appetite and weight (n=4), bleeding per rectum (n=1), and anemia (n=5). Preoperative workup included blood and urine investigations, blood grouping and typing, tumor marker levels, EKG, chest x-ray, ultrasonogram,

DOI: 10.1007/s10350-008-9316-2 • Volume 51: 1120–1124 (2008) • ©The ASCRS 2008 • Published Online: 15 May 2008

Distal Pancreatectomy

Surg Endosc (2007) 21: 373–377
DOI: 10.1007/s00464-006-9020-z

SURGICAL ENDOSCOPY
and Other Interventional Techniques

Laparoscopic distal pancreatectomy

Results of a prospective non-randomized study from a tertiary center

C. Palanivelu, R. Shetty, K. Jani, K. Sendhilkumar, P. S. Rajan, G. S. Maheshkumar

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Videos in Royal College of Surgeons of Edinburgh website

18 high quality videos available at: www.edu.rcsed.ac.uk

Emerging Technology - Natural Orifice Transluminal Endoscopic Surgery (NOTES)

The Scarless Surgery

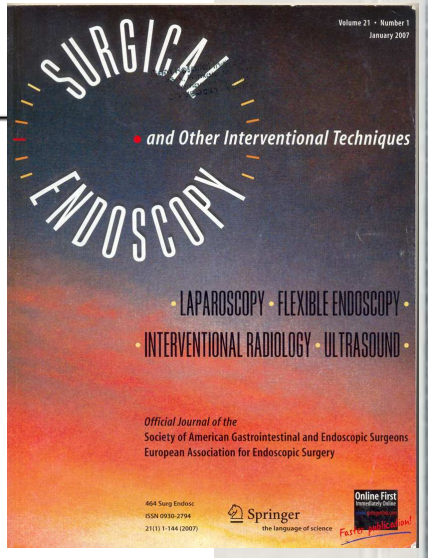
NOTES

Surg Endosc (2008) 22:1343–1347
DOI 10.1007/s00464-008-9811-5

ENDOLUMINAL SURGERY

Transvaginal endoscopic appendectomy in humans: a unique approach to NOTES—world's first report

Chinnusamy Palanivelu · Pidigu Seshiyer Rajan · Muthukumaran Rangarajan · Ramakrishnan Parthasarathi · Palanisamy Senthilnathan · Mohan Prasad



NOTES

- First Live – N.O.T.E.S

Live demonstration of N.O.T.E.S: Transvaginal appendectomy transmitted in real time to 5th International Workshop on EUS & Advanced Therapeutic Endoscopy Seoul, Korea 2008

Emerging Technology
Robotic Surgery

Robotic Surgery - Advantages

- Enhanced 3D visualization
- Increased degree of movement
- Magnification
- Tremor elimination
- Separates surgeon from patient
- Tele-proctoring, Tele-monitoring, Tele-consulting, and Tele-mentoring

Robotic in Esophageal Surgery

- Despite our effort in pioneering, standardizing, publishing the technique of Minimally Invasive Esophagectomy, reproducibility by other surgeons is poor.
- Reasons include technical difficulty, long learning curve, High risk of complications.
- These issues can be overcome by Robotic surgery

Robotic in Esophageal Surgery

- R van Hillegerberg from Holland published a series of 21 patients.
- First series of Robotic Esophagectomy
- Concluded that Robot assisted esophagectomy was feasible and associated with lesser morbidity

Our Proposed Project

- To prove feasibility of Robotic trans-thorasic Esophagectomy and three field lymphadenectomy (RTTE) for esophageal cancer
- To standardize the procedure of RTTE
- To compare the short term outcome of the same with thoraco-laparoscopic esophagectomy
- To compare the oncological outcome of both

Our Proposed Project

- Three Phases

1. Early learning curve : 3-6 months 15 cases

    •Esophagectomy combined with assistance by conventional thoracoscopy and laparoscopy

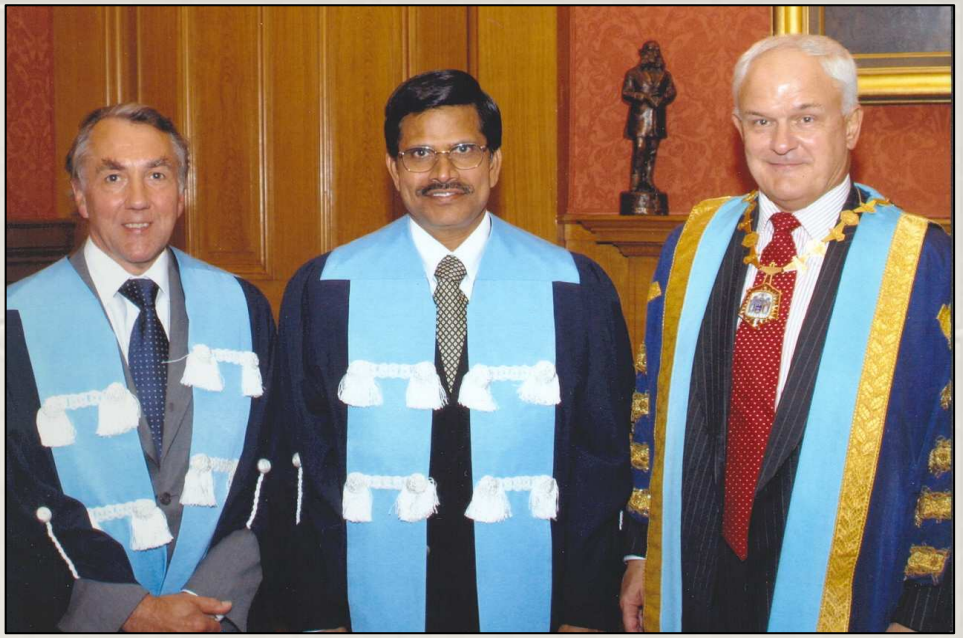
2. Consolidation and recruitment phase : 6th month - 30th month - 75 cases

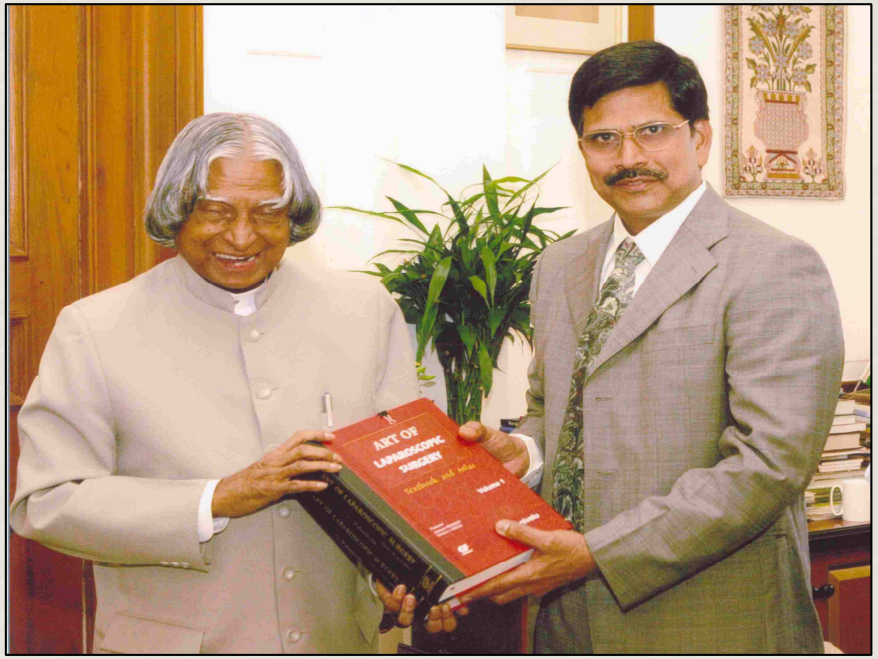
3. Analysis - 3 months

Existing Facilities

- One of the highest volume centre for carcinoma esophagus in India
- One of the best expertise in the world in Minimally Invasive Esophagectomy
- Facilities for accurate pre-operative staging and excellent post-operative care
- State of art International standard operation theatres
- Surgeons who undergone preliminary training in robotic surgery
- World class teleconferencing facility


ULTRACISION HARMONIC SCALPEL
GENERATOR 300
3
5
MIN
MAX
LigaSure
vessel sealing system
ERBE
ICC 350
AUTO CUT
AUTO COAG 1
AUTO COAG 2
AUTO BIPOLAR
ERBE
APC 300
PROG
meridian




ART OF
LAPAROSCOPIC
SURGERY

Thank You