

Synopsis

Research Project: Development of Laparoscopy in Rural India

Since the early 1970's pioneers in India have set mile stones in laparoscopy and later in laparoscopic surgery (LS)^[3]. In time many of these hospitals became specialised high volume centres based in major cities. With two thirds of India's population living in rural areas and one third of the population living below the poverty line, access to sophisticated surgery is limited. However these patients benefit most from the early return to work after minimal access surgery^[4,5]. The scope of operations in the rural setting is considerable and often cost-cutting, ranging from diagnostic laparoscopy saving CT or MRI scanning or laparoscopic vagotomy saving a life long medication on proton pump inhibitors with cholecystectomy, appendectomy and sterilisation making up the most of operations^[6,7,8,9,10]. There is concern whether LS is to be promoted in rural hospitals due to concerns of a greater consumption of resources^[11]. Cost effectiveness is a key issue, thus forcing the rural surgeon to improvise^[12,13,14]. One of the main cost factors is the investment in surgical instruments and equipment (camera, light, monitor, CO₂-insufflator, etc.).

This study is to determine the availability of LS in rural India with present investments and the projected development of LS, the need for facilities and financial resources. Special emphasis is placed on the surgeon's needs. For this a questionnaire [Appendix I] will be circulated to the Members of the Association of Surgeons of India (ASI), the Indian Association of Gastrointestinal Endosurgeons (IAGES) and the Association of Rural Surgeons of India (ARSI).

Approximately 12800 ASI^[15], 1800 IAGES^[16] and 400 ARSI^[17] Members add up to a total of 15000 potential recipients of the questionnaire. A survey among ASI members in the year 1986^[13] judging the activity in rural areas had a feedback of 1,7%. By adding a prepaid return envelope this rate can surely be improved to at least 5%, giving a projected return of 750 questionnaires thus providing adequate data to be able to determine significant results.

Relying purely on a printed questionnaire and postal services creates costs per recipient of approximately 50 INR adding up to a total of 7.5 lakhs (11000 Euro). This may be restricted due to limited financial resources available from industry sponsoring the research. So a two-staged procedure is advocated: Primarily there will be a telephone survey with known better return rates^[18]. Lack of telephone connections in rural areas calls for a second step circulating the questionnaire via postal services reducing the number by step one.

Projected results are that there is a desire to facilitate LS in rural hospitals but that there is a need of sturdy reusable equipment at drastically reduced cost. The goal is to demonstrate to industry that the developing world has a huge potential for LS equipment which needs to meet specific demands different to the increasingly sophisticated equipment in Europe or the US.

Appendix I

Questionnaire: Development of Laparoscopic Surgery in India

1. Surgeon's Name _____
2. Hospital Name / Institution _____
3. Address _____
4. Telephone number _____
5. Email _____
6. Qualification MBBS
 MS Specialisation _____
7. Member of association ASI (Association of Surgeons of India)
 ARSI (Association of Rural Surgeons of India)
 IAGES (Indian Association of Gastrointestinal Endosurgeons)
 Other _____

Part I: Specifications of Hospital/Institute

1. Total number of beds (incl. medicine and other specialities) _____.
2. Total number of operating doctors (surgeons, gynaecologists, orthopaedists, etc.) _____.
3. Setting city more than 1 million population
 city less than 1 million population
 rural town
 completely rural
4. Next referral hospital in approximately in distance kilometres _____ km.
5. Main funding Government
 Private
 NGO/Missionary etc.
6. Approximate percentage of patients below poverty line _____ % of total patients.

7. Approximate number of surgical procedures in your hospital 2009:

	<i>open surgery</i>	<i>laparoscopic surgery</i>
Diagnostic laparotomy/laparoscopy	_____	_____
Appendectomy	_____	_____
Cholecystectomy	_____	_____
Hernia repair	_____	_____
Colon resection	_____	_____
Vagotomy	_____	_____
Sterilisation	_____	_____
Hysterectomy	_____	_____
Ovarial cyst	_____	_____
Ectopic rupture	_____	_____

8. Approximate all over cost for patient including charges for surgeon, anaesthetist, medication and hospital stay for cholecystectomy as open procedure _____ INR and as laparoscopic cholecystectomy _____ INR.

9. Has your hospital/institute trained any surgeons in laparoscopic surgery in the year 2009?

- no.
- yes, how many? _____

10. If your hospital dose no laparoscopic surgery up to date, what are the main reasons:

- high cost
- lack of training
- no benefit
- complication rate
- other reasons, please specify _____

---> in this case please continue with part III

Part II: Laparoscopic surgery at present in your hopsital

1. Approximate investment in laparoscopic surgery equipment and instruments in your hospital up to date _____ INR

2. What is used to create pneumoperitoneum?

- CO₂
- air
- other: _____

3. What is used as a light source?

- conventional halogen
- cold light source
- other: _____

4. Do you regularly use disposable products like

- harmonic scalpel
- linear endostaplers
- circular endostaplers
- endo-bags
- other: _____

5. What kind of "self made" instruments and materials do you use?

- endo-loops
- self made sutures
- condoms as endo-bags
- others:

6. What kind of anaesthesia is used for laparoscopic surgery?

	<i>all</i>	<i>mainly</i>	<i>some</i>	<i>never</i>
general anaesthesia with ether	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
general anaesthesia with other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
spinal anaesthesia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
local anaesthesia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. What kind of difficulties do you encounter practising laparoscopic surgery?

	<i>none</i>	<i>some</i>	<i>often</i>	<i>major difficulties</i>
finding adequate equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
financing equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
repair of equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
adequate power supply	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
time consuming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
complications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
conversion rate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
acceptance by patients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
unqualified paramedical staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
lack of diagnostic facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
legal problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other, please specify _____				

III Prospected development in the next 5 years in your Hospital

1. Please judge the development of laparoscopic procedures in the next 5 years

	<i>open surgery</i>		<i>laparoscopic surgery</i>	
	<i>all</i>	<i>mainly</i>	<i>mainly</i>	<i>all</i>
Appendectomy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cholecystectomy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hernia repair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Colon resection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. What is the planned investment in laparoscopic equipment and instruments in the next 5 years?
_____ INR

3. If your hospital has no intention to expand laparoscopic surgery, what are the main reasons?

- high cost
- lack of training
- no benefit
- complication rate
- other reasons, please specify _____

4. Do you see a positive cost-benefit ratio of laparoscopic surgery for “under privileged” patients (rural, below poverty line, low caste, etc.)?

- none
- to some extent
- definitively

5. If yes, what is the main benefit?

- short hospital stay
- early onset of work
- aesthetic
- reduced pain
- other _____

6. What aspects do you consider important when installing laparoscopic equipment and what is difficult to obtain?

	<i>important</i>	<i>difficult to obtain</i>
low cost	<input type="checkbox"/>	<input type="checkbox"/>
durability	<input type="checkbox"/>	<input type="checkbox"/>
easy maintenance	<input type="checkbox"/>	<input type="checkbox"/>
compatibility	<input type="checkbox"/>	<input type="checkbox"/>
reusable	<input type="checkbox"/>	<input type="checkbox"/>
high definition camera and monitor	<input type="checkbox"/>	<input type="checkbox"/>
CO ₂ -insufflator rather than air	<input type="checkbox"/>	<input type="checkbox"/>
cold light source rather than halogen	<input type="checkbox"/>	<input type="checkbox"/>
video documentation system	<input type="checkbox"/>	<input type="checkbox"/>
other _____	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>

7. What have you always wanted to tell designers and industry about their products, what do they need to change, what is great?

8. Have we missed anything important in this questionnaire?

Thank you very much for your patience and your detailed answers.

Date _____

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