Advanced Instrument’s / Medical Devices

Advanced Reprocessing Methods
Complex Instruments...

- What the Future Holds... Why More Advanced – Why More Complex...

- A Brief History – The “Dirty” Old Days...

- Where we are Now - Cleaning Parameters for Early Complex Instruments – Sonic Irrigation

- Proving Its Clean - A Method For Visualisation and Process Optimisation...

- New Critical Wash Parameters for Complex Devices...

- Orientation of Instruments During Reprocessing to Optimise Process Parameters...

- What is Required of Instrument Reprocessing Systems - NOW - and for the Future.
Trans-luminal Surgery (N.O.T.E.S.)
Natural Orifice Trans-luminal Endoscopic Surgery

A future without scars

Breakthrough as appendix is cut out via man’s mouth

By Fiona MacRae Science Reporter

A SORE throat is not exactly the most obvious side effect of having your appendix out but for Jeff Scholtz it was proof he had secured his place in medical history.
Mr Scholtz is one of the first patients in the world to have his appendix removed through his mouth.
Crucially, the surgery caused no scar and, barring the sore throat, had no side effects.
It left Mr Scholtz, a former U.S. marine, feeling so chipper he was back at work two days later and, 24 hours after that, was fit enough to do sit-ups.
The operation, which is a major advance in the quest for scar-free surgery, was performed by doctors in San Diego, California, who used a flexible tube to thread miniature surgical instruments down the 42-year-old's throat to his stomach.
Mr Scholtz had a hole made in the stomach wall to get at the appendix - a small worm-like pouch attached to the large bowel.
The inflamed appendix was cut away, bagged and pulled back into the stomach - and out of the mouth. Mr Scholtz, a clothing manufacturer, said: ‘They told me to take it easy but I felt great.
I was eating pizza and doing sit-ups three days later.
You’d think the way it was done, going through the stomach wall, I’d have had all kind of stomach pains, but there was nothing.
‘My father had the conventional appendix removal. I didn’t want the standard issue scar.’
Patients given conventional appendectomies through the abdomen can spend up to a week in hospital and may have to avoid playing sport for up to six weeks.
Santiago Horgan, of the University of San Diego Medical Centre, said operating from within the stomach also cut the risk of hernias and infections.
Professor Horgan, who leads the hospital’s Centre for the Future of Surgery, told Sky News: ‘Imagine a day when surgery requires no incisions or just one tiny incision that is only millimetres in length.
Scourless, painless techniques are what the centre is setting the stage for right at this minute. Patients deserve it.
He added: ‘My dad was a surgeon and, in his time, the larger the incision, the better the surgeon. Today, we are moving away from that and trying to minimise the trauma.’
Dr Hiten Patel, an expert in non-invasive surgery at University College Hospital, London, said scar-free surgery would have many benefits.
‘There is a faster recovery time, there is less pain,’ he said. ‘In the space of ten years, we have moved from big scar surgery to keyhole surgery. This is the way forward.’
The first similar scar-free operations in Britain are thought to be three to four years away.

f.macrae@dailymail.co.uk
Incisionless Surgery
### Why Robotic Surgery?

<table>
<thead>
<tr>
<th>Clinic / Hospital A</th>
<th>Cost of Expanding Hospital to accommodate Increased Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Surgery</td>
<td>HIGH</td>
</tr>
<tr>
<td>50 Prostatectomy</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinic / Hospital B</th>
<th>Cost of Expanding Hospital to accommodate Increased Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robotic Surgery</td>
<td>LOW</td>
</tr>
<tr>
<td>500 Prostatectomy</td>
<td></td>
</tr>
</tbody>
</table>

- **Robotic Surgery**
- **NOTES**
  - Natural Orifice Transluminal Endoscopic Surgery
- **Minimal Investment to Increase**
  - Hospital Throughput
  - Increased Patient Throughput
  - Increased Revenue Generation
  - through stabilised Fixed costs
What Advanced Surgery Will Bring...

- More Patients
- More Complex Procedures
- Faster Instrument Turnaround
- Less Space for Reprocessing 😊
- Faster More Versatile Washer Disinfector
- Lower Temperature Cleaning Performance
- A VERY fast cycle time
Early Lap Instrument

Early – Surrogate PCD for Education
Established Washing Parameters For Early Complex Devices

- Time...
- Temperature...
- Dilution...
- Dilution By.flushing INSIDE the Lumen
- Mechanical Action – Ultrasonic's or Turbulence
- Cleaning Chemistry
Combined Flushing and Mechanical Energy

- Pulsed Flush
- Ultrasonic Cleaning
- Sonic Irrigator
Ultrasonics - silicone...
For those in doubt...
Prove It’s Clean – Using the RNM (Radio Neuclide Method)
Gamma Camera Method
Visualisation for Optimisation

Test Instrument
Fan Retractor

Un Cleaned

15 sec Water Gun & 45 Min’s Washer

10 Min’s Medisafe
Process Optimisation...

- Tests Showed Us That With Increasingly Complex Instruments:

  - Ultra High Pressure Required for Some Complex Instruments
  
  - Ultrasonic Cleaning Does Penetrate the Walls of Lumen Devices and Helps with Cleaning
  
  - Ultrasonic cleaning is essential for some complex devices.
  
  - Increased Fluid Flush / Dilution is Required
New Parameters Complex Devices...

- Ultra High Pressure Flushing
- Specified Flow Rate Per Lumen
- Fixed Instrument Orientation Within the Wash
- Mechanical Cleaning Energy Inside the Lumen
- Device or Systems to Ensure Correct Instrument Orientation
- Device or system to open Instrument Valves (where applicable)
Delicate Ophthalmic Instrument Cleaning Requirements

- Flushing
- Care In Handling
- Transportation
- Correct Orientation
- Flush Connectivity
- Flush Activation
- High Pressure Flushing
- Sonic Irrigator
- Ultrasonic Cleaning
Complex Instrument Cleaning Requirements…

- High Pressure
- Care In Handling
- Transportation
- Correct Orientation
- Flush Connectivity
- Flush Activation
- High Pressure Flushing
- Sonic Irrigator
- Ultrasonic Cleaning
Instrument Manufacturer Approval...

- Major manufacturers
- Compliance to standards
- More to follow...

MEDISAFE® Sonic Irrigator PCF system®

Tested by
INTUITIVE SURGICAL, INC
for use with
da Vinci
SURGICAL SYSTEM
Instruments*

* For complete listing of validated instruments, visit www.intuitivesurgical.com
da Vinci is a registered trademark of Intuitive Surgical, Inc.
What We Need for the Future...

- Dedicated Instrument Specific Trays – Carriers
- High Pressure - Lumen Flushing
- Ultrasonic Cleaning
- Large Volume Dilution
- High Pressure Lumen Air Purging
- Low Temperature Drying
To summarise...

- Instrumentation is evolving
- Cleaning methods haven’t kept up with this evolution
- Emphasis MUST be on effective cleaning
- We are going to be processing MORE not less, instruments
- Current cleaning processes are ineffective
- The cleaning process MUST be automated
Technology For Tomorrow...

- Fast Cycle Time
- High Pressure Lumen Flush
- Ultrasonic / Sonic Irrigation
- 144 Lumen Flush
Thank you...