NICE news in the annals

Recent NICE Guidance of interest to surgeons

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Interventional Procedures

Ex vivo hepatic resection and re-implantation for liver cancer (April 2009)

Only a limited number of patients with liver metastasis can be treated by surgical resection with the aim of cure. One important factor which may prevent resection of metastases is their site in the liver, which can make operation impossible. Liver resection becomes increasingly complex when the tumour is located near the inferior vena cava. *Ex vivo* hepatic resection and re-implantation of the liver was notified to NICE as a novel way to treat patients who would otherwise have inoperable tumours.

The procedure involves removal of the liver, in a manner similar to that used for hepatic transplantation. A bloodless resection of the segments containing metastases is then carried out, if necessary with reconstruction of the hepatic and/or portal vein. The liver is then re-implanted into the patient.

The published evidence was limited to one case series and three case reports, with a total of 30 patients. Survival was the key efficacy outcome, both in the postoperative period and in the longer term. In a case report of 22 patients, 13 survived the procedure but only three survived to 36-month follow-up, the remainder having died of tumour recurrence 12–36 months after operation. Among the 10 patients with colorectal metastases in this case report, the mean survival time after the procedure was 21 months and two patients with focal nodular hyperplasia were alive at 5- and 9-year follow-up.

In the case report of 22 patients, 32% (7/22) required a liver transplant either immediately after the procedure (2 patients) or at a subsequent procedure (5 patients). The potential impact on the demand for donor livers was a concern of both the Committee and Specialist Advisers.

In view of the very limited numbers of reported patients, the substantial risks of the procedure and the limited survival, NICE guidance recommended that this procedure should be used only with 'special arrangements' for clinical

governance, consent and audit or research. Its use should be restricted to patients who would otherwise not survive, and for whom other treatment options have failed or are inappropriate.

NICE has published Interventional Procedures guidance on a number of other treatments for liver metastases. For more information see www.nice.org.uk.

Endoscopic mastectomy and endoscopic wide local excision for breast cancer (April 2009)

Endoscopic mastectomy and wide local excision for breast cancer introduces new considerations about efficacy and safety. Endoscopic breast surgery is usually done through an axillary incision, and sometimes a peri-areolar incision as well. Carbon dioxide insufflation is used to create a working space, following which either mastectomy, or wide local excision is performed. Immediate reconstructive surgery may be done, if appropriate.

The published evidence consisted of one, non-randomised, controlled trial and eight case series. Key efficacy outcomes for this procedure include survival, adequacy of resection, recurrence rates, and patient satisfaction. A case series of 551 patients treated by endoscopic mastectomy reported a distant-metastasis-free survival rate of 100% in patients with ductal carcinoma *in situ* ($n = 47$), 96% in patients with T1 tumours ($n = 190$) and 91% in patients with T2 tumours ($n = 314$) at 66-month follow-up. The same case series reported local recurrence in 4% (23/551) of patients after a mean follow-up of 38.4 months. Two other case series, including 82 and 131 patients with malignant tumours, reported clear histological resection margins (for 5 mm) in all patients. The case series of 551 patients reported overall patient satisfaction results, from a postal questionnaire 6 months following surgery: 76% (366/481) reported a 'good' result.

In terms of safety, the case series of 551 patients reported skin necrosis in 4% (22/551) of patients. The case series of 82 patients with malignant tumours reported second degree burns in four patients (5%). The non-randomised

controlled trial of 46 patients reported significantly greater mean blood loss in patients treated by endoscopic mastectomy compared to those treated by open subcutaneous mastectomy (356 ml vs 189 ml; $P = 0.0266$).

Because the issue of complete resection and long-term survival is of such paramount importance in treating breast cancer, the Committee considered that the evidence on safety and efficacy of this procedure was not adequate. It was specifically noted that much of the published work was from Asian countries, where the size of women's breasts tends to be smaller than in the UK. Based on the published papers and on specialist advice, it was recommended that endoscopic resection for breast cancer should only be used in the context of research. It should be done only in units which specialise in the management of breast cancer, by surgeons trained in both breast cancer surgery and endoscopy. Research should include clear descriptions of tumour size and location, and breast size. Outcomes should include adequacy of resection margins, survival, recurrence and reoperation rates, quality of life, and cosmesis.

Balloon catheter dilation of paranasal sinus ostia for chronic sinusitis (September 2008)

Patients with recurrent sinusitis may require surgery to enlarge the ostia of affected sinuses, to improve drainage of infected material. This is normally done by functional endoscopic sinus surgery (FESS). However, circumferential scarring and adhesions may occur after this procedure, causing recurrent narrowing and obstruction of ostia. In addition, bleeding may obscure intra-operative visualisation, making this procedure somewhat difficult to perform.

Balloon catheter dilatation aims to restore normal sinus drainage and function without damaging the mucosa around the sinus ostium, so reducing the likelihood of scarring and recurrence of obstruction. With the patient under general anaesthetic, a catheter and flexible guidewire are inserted through the nostril using endoscopy and fluoroscopy to identify the target sinus. A balloon catheter is positioned in the blocked ostium. The balloon is then inflated to a pressure of 2–8 atmospheres, with the aim of restructuring and widening the ostium by creating microfractures in the surrounding bone. The inflamed sinus may also be irrigated. The catheter and guidewire are then removed.

The published evidence included one non-randomised controlled trial, and three case series. Efficacy outcomes were successful cannulation of the sinus ostium, patient reported symptom improvement and the need for revisional surgery. Cannulation of the sinus ostium was achieved in 97% (347/358), in a case series of 115 patients. A case series of 1036 patients (3276 sinuses) reported that revisional surgery was required in 2% (25/1036) of patients, either due to mucosal alteration or opacified sinuses at a mean follow-up

of 40 weeks. In the same study, 95% of patients reported improvements in sinus symptoms, and 73% were completely free of symptoms at a mean follow-up of 40 weeks.

No serious adverse events were reported in any of the case series, although scarring was a sequel from this procedure in a non-randomised controlled trial. This difference was not statistically significant. The clinical importance of this outcome was not described and is uncertain.

The Committee considered that there was enough evidence that the procedure was efficacious, and that the risk of it causing serious complications was sufficiently low for it to be used with normal arrangements for governance, consent and audit.

Based on the published evidence and the specialist advice received, it was recommended that the procedure should only be carried out by surgeons with experience of complex sinus surgery, and specific training in both the procedure and in the use of fluoroscopy.

Total wrist replacement (August 2008)

Total wrist replacement aims to create a stable, pain-free joint with a functional range of movement, which other current treatment options for wrist arthritis do not achieve. A range of implants are available for this procedure and their effectiveness varies: some types have been withdrawn from use, and new designs continue to evolve.

The evidence base used by the Committee comprised one non-randomised controlled trial, five case series and one case report, with a total of 178 patients. The longest duration of follow-up was 4 years and this was not considered to be adequate. A recommendation was, therefore, made for the procedure to be used only with 'special arrangements' (tell your hospital; tell your patients; and audit results). In particular, it was noted that the National Joint Register will soon have data fields for total wrist replacement, and surgeons should submit data to the register. This will enable a thorough review of this procedure with longer-term efficacy and safety data.

Technology Appraisals

Abdominal aortic aneurysm – endovascular stent-grafts (February 2009)

Endovascular aneurysm repair (EVAR) is a minimally invasive technique that involves insertion of a stent-graft via the femoral arteries, through relatively small groin incisions. The pre-packaged stent graft is positioned under X-ray guidance and is anchored to the aortic wall by a variety of different mechanisms including hooks and struts. Potential advantages of EVAR over conventional open surgical repair (OSR) include less blood loss, no need for an intensive care unit (ICU) bed, less pain, fewer cardiac and other postoperative complications and reduced length of hospital stay.

Potential disadvantages include endovascular leaks (endoleaks) between the stent graft and the aortic wall, or via branches of the aorta back-bleeding into the aneurysm sac. Patients who have had EVAR do require computed tomography (CT) or ultrasound scans and X-rays in the long term to check that the stent graft has not become displaced and to look for the presence of late endoleaks. In addition, there is a risk of the need for conversion to OSR at the time of the procedure (a particular concern for patients initially considered unfit for open surgery).

The guidance states:

- *Endovascular stent-grafts are recommended as a treatment option for patients with unruptured infra-renal abdominal aortic aneurysms, for whom surgical intervention (open surgical repair or endovascular aneurysm repair) is considered appropriate.*
- *The decision on whether endovascular aneurysm repair is preferred over open surgical repair should be made jointly by the patient and their clinician after assessment of a number of factors including:*
 1. *Aneurysm size and morphology.*
 2. *Patient age, general life expectancy and fitness for open surgery.*
 3. *The short- and long-term benefits and risks of the procedures including aneurysm-related mortality and operative mortality.*
- *Endovascular aneurysm repair should only be performed in specialist centres by clinical teams experienced in the management of abdominal aortic aneurysms. The teams should have appropriate expertise in all aspects of patient assessment and the use of endovascular aortic stent-grafts.*
- *Endovascular aortic stent-grafts are not recommended for patients with ruptured aneurysms except in the context of research. Given the difficulties of conducting randomised controlled trials, it is recommended that data should be collected through existing registries to enable further research.*

These recommendations for the use of EVAR were based primarily on data in a systematic review completed in June 2005 of 77 studies including four RCTs. These showed lower 30-day mortality after EVAR (2% vs 5% after OSR) and also significantly less complications, particularly chest problems. At 4-year follow-up, however, there was no difference in all-cause mortality between EVAR and OSR. The incidence of late problems after EVAR was higher than OSR, with a 19% rate of endoleaks (but evidence to suggest that this rate was decreasing), 1% stent migration, and aneurysm rupture in 0.2–0.9% (compared with 0.2% after OSR). More secondary interventions were required after EVAR.

The economic analysis for cost effectiveness of EVAR was complex. Assumptions agreed for the economic model included hazard ratios of 1.5 for re-intervention and for late aneurysm related deaths after EVAR; excess non-aneurysm mortality of 1.072 after EVAR; and an annual follow-up cost of £54. A critical element of the assumptions was the cost of the device used in EVAR. If that cost was < £5,000, then the initial procedure was similar to OSR.

The guidance document pointed out important dilemmas which remain in the use of EVAR: in particular, the fact that the procedure is less cost effective in younger, fitter patients (for whom some surgeons favour the more 'certain' long-term option of OSR) but their mortality, however low after OSR, is three times lower after EVAR. Another very important dilemma is when to treat unfit (and especially older, unfit) patients, for whom the potential benefits of prophylactic AAA repair are uncertain. Finally, there was a recommendation for research into the use of EVAR for ruptured aneurysms.

Other Guidance

Between July 2008 and April 2009, NICE published further guidance of relevance to surgeons (listed below) which could not be summarised here. Please refer to the NICE website (<www.nice.org.uk>) for details.

Interventional Procedures guidance

- Laparoscopic gastrectomy for cancer
- Autologous pancreatic islet cell transplantation for improved glycaemic control after pancreatectomy
- Functional electrical stimulation for drop foot of central neurological origin
- Sacrocolpopexy using mesh for vaginal vault prolapse repair
- Intra-ocular lens insertion for correction of refractive error, with preservation of the natural lens
- Laparoscopic cystectomy
- Implantation of an opaque intra-ocular lens for intractable double vision
- Percutaneous (non-thoracoscopic) epicardial catheter radiofrequency ablation for ventricular tachycardia
- Brachytherapy as the sole method of adjuvant radiotherapy for breast cancer after local excision
- Electrically-stimulated intravesical chemotherapy for superficial bladder cancer
- Extracorporeal photopheresis for Crohn's disease
- Photodynamic therapy for brain tumours
- Direct skeletal fixation of limb or digit prostheses using intra-osseous transcutaneous implants
- Implantation of miniature lens systems for advanced age-related macular degeneration
- Laparoscopic prostatectomy for benign prostatic

obstruction

- Transabdominal artificial bowel sphincter implantation for faecal incontinence
- Autologous blood injection for tendinopathy
- Infracoccygeal sacropexy using mesh for uterine prolapse repair
- Infracoccygeal sacropexy using mesh for vaginal vault prolapse repair
- Insertion of mesh uterine suspension sling (including sacrohysteropexy) for uterine prolapse repair
- Sacrocolpopexy with hysterectomy using mesh for uterine prolapse repair
- Deep dermal injection of non-absorbable gel polymer for HIV-related facial lipo-atrophy
- Endoscopic radiofrequency ablation for gastro-oesophageal reflux disease
- Percutaneous (non-thoracoscopic) epicardial catheter radiofrequency ablation for atrial fibrillation
- Combined bony and soft tissue reconstruction for hip joint stabilisation in proximal focal femoral deficiency (PFFD)

Clinical Guidelines

- Induction of labour
- Respiratory tract infections
- Stroke
- Familial hypercholesterolaemia
- Attention deficit hyperactivity disorder (ADHD)
- Chronic kidney disease
- Surgical site infection
- Metastatic spinal cord compression
- Antisocial personality disorder
- Borderline personality disorder (BPD)
- Medicines adherence
- Breast cancer (advanced)
- Breast cancer (early and locally advanced)
- Rheumatoid arthritis
- Critical illness rehabilitation
- Schizophrenia (update)
- Diarrhoea and vomiting in children under 5 years of age
- Glaucoma

Technology Appraisals relevant to surgery

- Venous thrombo-embolism – dabigatran
- Hearing impairment – cochlear implants
- Organ preservation (renal) – machine perfusion and static storage
- Venous thrombo-embolism – rivaroxaban