199 POSTER

Magnetic resonance guided breast surgery

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Background: Contrast enhanced magnetic resonance imaging is highly sensitive and specific for the detection of breast lesions of all types. It may also reveal any unsuspected and impalpable carcinoma in situ associated with a primary lesion. Intraoperative magnetic resonance imaging may help guide excision of breast lesions, particularly those that are impalpable and reduce recurrence of breast cancer due to involved resection margins or inadequate excision of multifocal disease.

Method: 35 patients (range 20–72 years) with breast lesions requiring excision underwent surgery under general anaesthesia in a 0.5 T Interventional Magnetic Resonance (iMR) unit. Lesions were localised with contrast enhanced (Gadolinium DTPA, 0.2 mmol/kg iv) Fast Spoiled Gradient sequences (FSPGR). 30 excision biopsies, three wide local excisions of impalpable areas after localisation with titanium wires and two simple mastectomies were undertaken in the iMR using titanium instruments and an ultrasonic scalpel. Intraoperative imaging with FSPGR sequences demonstrated developing resection margins and the course of excision was altered as necessary. Complete excision was confirmed at the end of the procedure with similar imaging protocols.

Results: All tumours were visualised with static imaging and all but one enhanced with contrast. Intra-operative imaging demonstrated a resection margin in all cases and post-procedure scans clearly demonstrated complete excision. There were 18 fibroadenomas, 10 foci of fibrocystic disease, 1 Schwannoma, 1 unenhancing area of fat necrosis, 1 area of DCIS and 4 invasive ductal carcinomas, one unexpected. All of the carcinomas were completely excised but the unsuspected carcinoma proceeded to have a further wide local excision.

Conclusions: Rapid sequences allow image guided biopsy and placement of guide wires. Intra-operative MR scanning reliably identifies palpable and impalpable breast tumours, demonstrates resection margins and confirms complete excision of the tumour.

200 POSTER

Management of non-palpable mammographic abnormalities: ABBI excision vs core biopsy

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Screen detected mammographic abnormalities pose diagnostic and therapeutic problems. We have prospectively assessed core biopsies and stereotactic excision biopsies performed on a prone table (ABBI, USSC).

Method: Patients were recruited from both screening and symptomatic clinics. The decision to perform a core biopsy or excision was based on radiological suspicion, type of radiological abnormality and stereo cytology result. All procedures were done as day cases under local anaesthesia.

Results:

n = 108	Benign	DCIS	Invasive	Equivocal
Core Biopsy n = 74	47 (3-radial scars)	14	10	3 (DCIS)
Excision n = 34	16	7	11	Nil

Core biopsy underestimated the disease in 9 cases, missed invasive disease in all 3 radial scars, under-diagnosed invasive carcinoma as DCIS in 3 and the 3 equivocal cases had DCIS. By contrast ABBI excision was accurate histologically in all 34 cases.

Conclusion: this study questions the accuracy of core biopsy and suggests that stereotactic excision may be a more appropriate diagnostic procedure in selected cases.

ABBI- Advanced Breast Biopsy Instrumentation, DCIS- Ductal carcinoma in situ.

201 POSTER

Accuracy of endoscopic axillary lymph node dissection in breast cancer patients

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Purpose: To reduce shoulder-arm morbidity after axillary lymph node dissection a new surgical approach has been introduced recently using minimal invasive techniques. We examined the feasibility and accuracy of endosdcopic lymph node dissection following liposuction in comparison to standard procedures for level I and II dissection.

Methods: In a series of 30 stage I breast cancer patients we performed endoscopic axillary lymph node dissection following lipoaspiration. Intraoperative identification of anatomical structures was registered as well as intra- And postoperative complications and the number of resected nodes. The results were compared with conventionel axillary lymph node dissections performed at the university of Ulm in 1997. Standardized histopathologic examination was performed for both techniques.

Results: In all patients an excellent identification of anatomical structures was achieved. After a learning curve of 15 cases the average number of resected nodes resected endoscopically equalled the average number of 18.4 lymph nodes harvested in open procedures. In spite of a very good subjective outcome concerning pain and shoulder-arm mobility, lymphorea and seroma rates were not decreased.

Conclusion: Endoscopic exploration of the axilla in breast cancer patients provides an excellent anatomic orientation and an accurate lymph node dissection. Further detailed studies will be necessary to evaluate the exact postoperative outcome of endoscopic axillary lymphadenectomy in comparison to open procedures.

202 POSTER

The specialist treatment of the axilla

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Aim: To compare the frequency and adequacy of staging, and definitive treatment of the axilla; and the impact on recurrence.

Methods: All women aged under 75 with a histologically verified breast cancer in a defined geographical area were identified through the regional cancer registry for the years 1986–1991 inclusive. All available case-notes were obtained from 11 treating hospitals. Data on surgical management, co-morbidity, post-operative treatments and recurrence were abstracted.

Results: Specialist units compared to non-specialists staged the axilla more frequently (93% vs 79%), and more adequately (92% vs 60%). Where no axillary surgery was performed a reason was more frequently found (97% vs 40%). Premenopausal women had inadequate staging performed in 3% compared to 38%. Non-specialist units inadequately treated women in whom sampling was performed in 35%. Overall, inadequate treatment of the axilla was seen in 4% treated by specialists compared to 38% treated by non-specialists. Axillary recurrence rates were 3 times higher for non-specialists (3% vs 10%). All differences were significant, $p < 0.01$.

Conclusions: Specialist treatment is more thorough, rational, comprehensive and complete. The treatment of the axilla by non-specialists reflects the controversy of this topic for the past twenty years.

203 POSTER

The relationship between margins of resection and the risk of local recurrence after breast conserving therapy

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The relationship between the presence of tumor at the margin of breast specimens and the risk of local recurrence after conservative surgery and radiation therapy is not clear so far. Between 1986 and 1993, 763 patients were treated by wide excision and RT (50 gy) at the Institute of Clinica Chirurgica I of Florence. Their mean age was 55 (range 22–83) and the mean follow-up was 6.8 years (range 10 months–11 years)

A positive margin was defined as tumor present at the inked margin of resection. The distribution of patients was: T1b 210, T1c 394, T2 (2–3 cm.) 148, T4b 11; N– 527, N+ 226, Nx 10. The presence of intraductal cancer in the breast specimen was: absent 600, present 137, E.I.C. 26.