ACR APPROPRIATENESS CRITERIA DUCTAL CARCINOMA IN SITU

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The Breast Journal, Volume 18, Issue 1, January, 2012, (published on behalf of the American College of Radiation Oncology)

The ACR Breast Expert Panel provide an outstanding overview on the condition of Ductal Carcinoma In Situ, and the options in surgical management together with the options with regard to radiation oncology. The American College of Radiology Appropriateness Criteria (ACRAC) provides evidence-based guidelines for specific clinical conditions that are reviewed every two years by a multidisciplinary expert panel. The guideline development and review include an extensive analysis of current medical literature from peer review journals and the application of well established consensus methodology to rate the appropriateness of imaging and the treatment procedures by the panel. In summary, for appropriate patients with limited disease the management with breast conservation surgery (BCS) followed by whole breast radiation (RT) is supported by multiple phase 3 studies, but mastectomy may be appropriate in selected patients. Omission of radiation therapy may also be reasonable in some patients. Various radiation techniques are described in the article including boost to the tumour bed, partial breast radiation, hyperfractionated techniques, and whole breast radiation therapy. There is limited scientific data available currently to support partial breast radiation in DCIS. The use of Tamoxifen to increase local control for hormone sensitive DCIS, is also discussed.

Ductal Carcinoma In Situ (DCIS) describes a spectrum of non invasive tumours that present most commonly as mammographically detected, clinically occult disease, but can occasionally present with a palpable mass, skin changes, or nipple discharge.

The three treatment approaches for DCIS include mastectomy, breast conservation surgery, (BCS) and thirdly, BCS plus radiation (BCS plus RT). Standard radiation therapy entails encompassing the whole breast but there has been a more recent resurgence of accelerated partial breast irradiation (APBI) delivering over a shorter treatment period.

There are no randomised DCIS trials comparing BCT to mastectomy, but historic mastectomy series suggest no difference in survival. There are four phase 3 trials for DCIS evaluating RT after BCS. All of these suggest a benefit in local control with the addition of radiation therapy compared with lumpectomy alone.
2. The authors outline the position of mastectomy and the treatment of DCIS. Mastectomy is justified based on the following factors: the presence of occult multicentric DCIS occurring in 20 - 30% of cases, a 10% risk of occult invasive disease being present, the potential for residual breast tissue to undergo malignant transformation, the significant risk of invasive recurrent disease after breast conservation surgery and finally, a relapse free survival approaching 100% in patients undergoing mastectomy.

However breast conservation surgery is the current standard treatment in most cases. The indications for mastectomy include the following: multicentric disease, the margins of resection being persistently positive in the individual patient, patient choice, large tumours relative to a small breast, and radiographic diffuse microcalcification indicative of multicentric disease.

Breast conservation surgery followed by radiation therapy remains the “gold standard” in the treatment of DCIS. The literature review was carried out in this published report, assessing the results of the important trials and studies that have been carried out during the last twenty years in the management of DCIS. These studies include the NSABP B-06 study, which was primarily assessing early invasive cancer but coincidentally included 76 patients with DCIS as well. The NSABP - 17 study with a twenty year follow up on the management of DCIS alone is now available reporting a local failure reduction from 31.7% to 15.7% with the inclusion of radiation therapy to patients who underwent breast conservation surgery. The EORTC - 10853 trial also randomised DCIS patients to BCT +- radiation therapy. The follow up data indicated a local failure rate of 26% versus 15% at ten years, non-irradiated to irradiated respectively. Further trials were also assessed in the article including the UK/ANZ DCIS trial and the SWE DCIS trial (from Sweden) both showing consistently a significant benefit in local control with radiation, reducing both invasive and in situ recurrence by more than 50%.

Three trials are available assessing excision alone without radiation therapy in early low grade DCIS, with variable results and limited follow up but nonetheless indicating that in certain cases, it may be justified to withhold radiation therapy.

The NSABP - B24 study demonstrated that Tamoxifen significantly reduces ipsilateral breast tumour recurrences, but without any impact on survival, in patients undergoing breast conservation surgery with radiation therapy for DCIS. The benefit was only in patients who were hormone receptor positive. As a result ER status is now routinely assessed with DCIS. There are currently no published randomised trials assessing Aromatase inhibitors in DCIS.

The role of sentinel lymph node biopsy in DCIS is discussed. Overall, 12% of sentinel lymph nodes are histologically positive in patients with DCIS. The clinical implications and relevance of this finding remain uncertain. The presence of micrometastases or isolated tumour cells carries uncertain significance in the longterm and is currently being studied. The presence of metastatic cells in the lymph nodes indicates micro-invasive disease present within the DCIS. Micro-invasive carcinoma (DCIS with micro-
invasion) is defined by penetration of cancer cells beyond the basement membrane. Micro-invasive carcinoma carries a small but definite risk of nodal metastases of between 3 - 10%, which may potentially impact system management, and thus most surgeons routinely perform sentinel lymph node biopsy in micro-invasive disease. The article submits that sentinel lymph node biopsy may be used routinely in the following cases of DCIS namely, radiographically extensive disease or a tumour size greater than 2.5cm, a planned mastectomy with pre-operative DCIS diagnosis given the inability to do sentinel node biopsy after mastectomy.

The use of MRI in DCIS was discussed. The indication for MRI in the assessment of DCIS patients remains uncertain. Formerly, MRI was regarded as inaccurate in the detection of DCIS but with current progression in techniques and radiological expertise, MRI has now been shown to be effective in detecting multicentric DCIS and in estimating the size of the DCIS. MRI is undoubtedly more sensitive for high grade than low grade DCIS. The advantages of MRI in DCIS include its high sensitivity (72 - 84%) increased detection of mammographically occult DCIS, better assessment of multicentricity, its ability to outperform mammography for dense breasts, and lastly, improved size estimation. The disadvantages include the high false positive rates, potentially unnecessary additional work up or delay of definitive treatment, increased anxiety of the patient, and cost.

The article describes management guidelines in the management of DCIS, including surgical options, radiation oncology options, and the possible place of Tamoxifen. The following final conclusions were made:

Breast Conserving Surgery (BCS) to achieve negative margins followed by whole breast radiation therapy is an acceptable treatment alternative to mastectomy for patients with localised DCIS wishing to conserve their breast.

In selected older patients with fully excised low grade disease, observation is an option.

With mastectomy most surgeons will simultaneously perform SNB.

Conventionally fractionated whole breast radiation consists of 45 - 50.4 Gray in 25 - 28 fractions, +- boost.

Accelerated partial breast radiation (APBI) may be used in appropriately selected patients but should be delivered on protocol.

Tamoxifen should be considered in ER positive patients.

Micro-invasive carcinoma, it is managed similarly to DCIS except that SLNB or axillary radiation therapy may be considered.

MRI for DCIS may be considered in selected patients in whom there are concerns regarding additional disease that would alter the planned management.