

## Role of Magnetic Resonance Imaging in Gynecomastia

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### Abstract

Gynecomastia is the benign enlargement of male breast glandular tissue and is the most common breast condition in males. At least 30% of males will be affected during their life. Since it causes anxiety, psychosocial discomfort and fear of breast cancer, early diagnostic evaluation is important and patients usually seek medical attention. Gynecomastia was reported to cause an imbalance between oestrogen and androgen action or an increased oestrogen to androgen ratio, due to increased oestrogen production, decreased androgen production or both. Evaluation of gynecomastia must include a detailed medical history, clinical examination, specific blood tests, imaging and tissue sampling. Individual treatment requirements can range from simple reassurance to medical treatment or even surgery. The main aim of any intervention is to relieve the symptoms and exclude other etiological factors. Preoperative imaging done with ultrasound breast tissue to assess the component of breast tissue which helps in planning the surgery. Magnetic resonance imaging is useful in the quantification amount of tissue and lesions before surgery in a three-dimensional way. In this case report we will assess the role of Magnetic resonance imaging in preoperative assessment of gynecomastia.

**Keywords:** Gynecomastia; Magnetic resonance imaging; Assessment.

## INTRODUCTION

Gynecomastia is a benign enlargement of the male breast resulting from a proliferation of the glandular component of the breast (Fig. 1). Gynecomastia is defined clinically by the presence of a rubbery or firm mass extending concentrically from the nipples. Although the condition is usually

bilateral, it can be unilateral. The condition known as pseudo gynecomastia, or lipomastia, is characterized by fat deposition without glandular proliferation. Male androgen production is primarily caused by the enzyme aromatase's peripheral conversion of androgens (testosterone and androstenedione) into oestradiol and estrone (mainly in muscle, skin, and adipose tissue). Only 6–10 mg of oestradiol and 2.5 mg of estrone are secreted daily by the testes. The remaining oestrogen in males is produced via the extra glandular aromatization of testosterone and androstenedione to oestradiol and estrone, which only accounts for a small portion of the oestrogens in circulation (15 percent of oestradiol and 5 percent of estrone). Therefore, any cause of excess oestrogen, such as overproduction or peripheral androgen aromatization, might start the chain reaction that leads to breast growth. Increased production and/or action of oestrogen can happen in the testicles or

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around the periphery.<sup>1</sup> Gynecomastia is evaluated by clinical examination and by imaging using Ultrasound and Magnetic resonance imaging. In this case report we will assess the role of MRI in gynecomastia assessment.



Fig. 1: Clinical picture of the patient - front view

## MATERIALS AND METHODS

The patient came with the chief complaints of Pain and swelling over the left breast 1 and half years (Fig. 1). The patient was apparently normal 1 and half years back when he noticed sudden sharp pain over the left side of the left breast which was associated with pressure over the same area, pain happens almost daily and was decreased by itself with analgesics. The patient started noticing swelling over the left breast for 6 months which was not associated with any discharge/swelling elsewhere. He was not associated with any comorbidities. The patient took anabolic steroids



Fig. 2: USG imaging of the left breast lesion

## RESULTS

Gynecomastia affects the younger males, adolescents most commonly. It needs psychological counselling, reassurance before planning for surgery. Hormonal evaluation and imaging were done before planning for surgery. Imaging helps in quantifying the amount of lipomatous and stromal tissue in the breast, which helps in deciding the surgery. Liposuction is done when there is more lipomatous tissue. Webster procedure is done when there is more stromal tissues. In this case magnetic

before 5 years and testosterone for 5 months for body building and fitness. The ultrasound shows Right breast was normal and the left breast shows Multiple hypoechoic solid appearing lobulated parallel to skin lesions with internal vascularity and no posterior features collectively measuring 1.7 X 0.6 X 0.6 noted in at the 3 4'0 clock position approx. 2.2 cm from the nipple areolar complex (Fig. 2). Rest of the breast tissues appears normal with no significant lymphadenopathy. Magnetic resonance imaging shows Multiple lobulated Hypoechoic parallel to skin lesions with internal vascularity at 3 4'0 clock as described BIRADS 4A. In view of suspicious lesion in the left breast MRI report shows left breast with fan shaped increased retro-areolar fibro-glandular tissue extending into left upper quadrant which shows Type 1 enhancement curves persistent progressive (Fig. 3). Few patchy areas of mild diffusion restriction are seen inside the parenchyma. Heterogeneously dense breast tissue. No evidence of retraction of nipple seen with Left axilla: Sub centimetric lymph nodes with maintained fatty hilum noted, largest SAD 4mm. The patient planned for biopsy of the lesion before planning surgery for gynecomastia. The biopsy result came as normal glandular tissue and no evidence of malignancy followed by patient underwent bilateral liposuction assisted webster procedure.

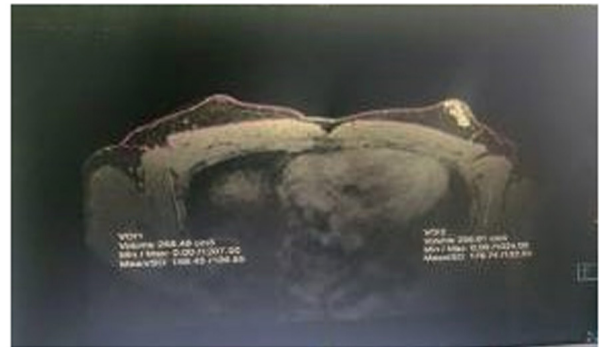


Fig. 3: MRI showing hyperenhanced lesion in the left breast

resonance imaging helps in identifying the stroma and lipomatous tissue in the breast. MRI will be helpful in identifying the suspicious lesions in the breast of gynecomastia patients.

## DISCUSSION

Patients that have physiologic gynecomastia don't need any more testing. Similar to asymptomatic gynecomastia, pubertal gynecomastia doesn't need any additional testing and has to be checked again in six months. In the following circumstances,

additional analysis is required, A breast size of at least 5 cm (macromastia). A lump that is sensitive, recently developed, advancing, or long-lasting.<sup>2</sup> Malignancy indicators (e.g., hard or fixed lymph nodes or positive lymph node findings) are indications for imaging before surgery. The following list of laboratory examinations could be taken into account are Panel for serum chemistry, Levels of dehydroepiandrosterone sulphate, luteinizing hormone (LH), oestradiol, and free or total testosterone, Free thyroxine and thyroid-stimulating hormone (TSH) levels. The following imaging tests are a few that could be beneficial are Mammography followed by a breast biopsy or fine needle aspiration, when necessary.<sup>2</sup> If the serum oestradiol level is high and the findings of the clinical examination suggest the possibility of a testicular tumour, testicular ultrasonography is advised. Breast ultrasonography, not with standing the modest positive predictive value of imaging in men.<sup>3</sup> On CT scans, gynecomastia is frequently detected. MRI defines the soft tissue in detail compared to other imaging modalities.<sup>4</sup>

## CONCLUSION

Gynecomastia affects two third of adolescent and young male, majority of which are idiopathic in nature, and patients undergo routine endocrine evaluation. Endocrinology evaluations should be judiciously used when indicated by proper history

taking and thorough clinical examination. Imaging helps in quantifying the amount of glandular and fatty tissues in the breast which helps in planning the surgery and helpful in the assessment of suspicious lesion in the gynecomastia.

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