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## CASE REPORT

# Tamoxifen to treat male pubertal gynaecomastia



Anthony Zehetner\*

Gosford Paediatrics, Suite 9, 16-18 Hills Street, Gosford, NSW 2250, Australia

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### KEYWORDS

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Tamoxifen;  
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Surgery

**Abstract** Pubertal gynaecomastia affects up to 70% of male adolescents, with the highest prevalence occurring at 14 years of age. While spontaneous regression occurs in 90% of cases within three years, until then, symptoms of mastodynia and psychological distress are prevalent in some patients prior to surgical treatment. Tamoxifen, a selective oestrogen receptor modulator (SERM), given at 20 mg daily for six months, was found to be a safe, well-tolerated and effective alternative treatment to current therapeutic options of watchful waiting (no management) and invasive cosmetic surgery. No adverse effects were observed in hormonal and auxological studies. The patient presented was able to avoid undergoing surgery, which should be reserved for persistent gynaecomastia present at the end of puberty after failing a trial of tamoxifen. Randomised controlled trials (RCTs) are needed for definitive therapeutic recommendations.

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## 1. Introduction

Gynaecomastia of adolescence is a common pubertal occurrence and is often associated with persistent physical discomfort and psychological distress in males. Many treatment options have been proposed, ranging from watchful waiting (no treatment), modification of hormonal

axes using medication and surgical intervention. The following case discussion provides an overview of the condition and describes the successful effect from using a six-month course of tamoxifen, a Selective Oestrogen Receptor Modulator (SERM), to treat pubertal gynaecomastia in a typical teenage male.

## 2. Case report

A 14-year-old boy presented with unilateral left-sided gynaecomastia present for the past twelve months (Fig. 1). There was associated breast pain (mastodynia) of 5/10 severity, which was worse when wearing tight-fitting

\* Tel.: +61 2 4322 5437; fax: +61 2 4322 5436.

E-mail address: [drz@gosfordpaediatrics.com.au](mailto:drz@gosfordpaediatrics.com.au).

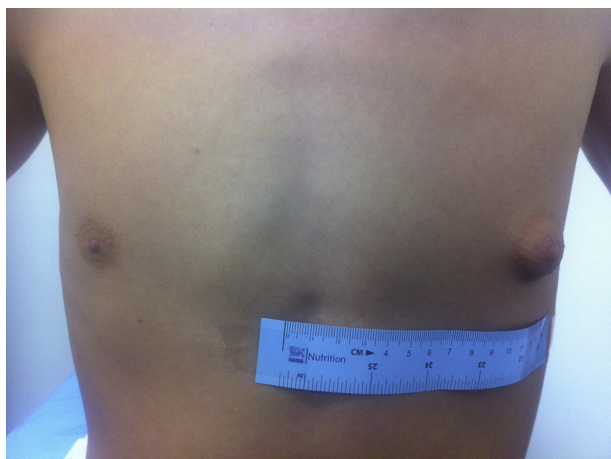
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shirts. He was a keen swimmer and due to feeling self-conscious and being teased by peers in the locker room had not been attending sports sessions. He had been referred for suction lipectomy (liposuction) and was presented for paediatrician review for possible medical therapy to avoid surgery.

The lesion measured 3 cm in diameter with marked prominence (Fig. 2). A tender 'disk' of firm tissue was palpable beneath the areolar region. The boy was not overweight (body mass index (BMI) of 20.2, 60th centile) and was in Tanner Stage 3 puberty (right testicular volume 10 mL, left 15 mL) with normal secondary sexual characteristics for his age. He denied taking any regular medication or having used any illicit substances, such as cannabis. There was a positive family history of pubertal gynaecomastia in his two older brothers, with one having had liposuction performed. Blood tests showed a high normal testosterone level (27 nmol/L), raised sex-hormone binding globulin (SHBG) 93 nmol/L (normal range 15–50 nmol/L) and slightly raised dehydroepiandrosterone sulphate (DHEAS) at 5 µmol/L (normal range 0.1–4.2 µmol/L). Other indices were normal; including a free androgen index (FAI) of 29%; oestradiol: <50 pmol/L; prolactin: 305 mIU/L; quantitative beta-human chorionic gonadotropin (β-hCG): <5 IU/L; follicle stimulating hormone (FSH): 1.7 IU/L; luteinising hormone (LH): 2.0 IU/L; and a full blood count, electrolytes and karyotype (46 XY), excluding Klinefelter Syndrome.

### 3. Discussion

Pubertal gynaecomastia is a benign physiological process arising from a transient imbalance between the greater stimulatory effects of oestrogens and lesser inhibitory effects of androgens on breast tissue during puberty. It is usually bilateral and affects up to 70% of adolescent males [1], with a peak incidence at approximately 14 years of age [2]. Oestrogen levels may become elevated from increased peripheral aromatase activity (often occurring in the adipose tissue of obese males and delaying puberty). This increases the SHBG levels, which bind free (active) testosterone, reducing its antitrophic action on breast tissue. Glandular proliferation, ductal hyperplasia and



**Figure 1** Prominent unilateral pubertal gynaecomastia at baseline. Left breast measures 3 cm [2].



**Figure 2** Side view of prominent left unilateral pubertal gynaecomastia at baseline.

periductal inflammation occur as a result. This rapid growth often occurs over the first six months of Tanner Stage 3 puberty, when pubertal gynaecomastia is most symptomatic (enlargement, pain and tenderness). While pubertal gynaecomastia is a cosmetic condition and the natural history is spontaneous regression in 90% of cases within three years [3], it is frequently psychologically distressing and causes embarrassment until it does so, with some adolescents electing to undergo potentially disfiguring surgery [4].

Gynaecomastia is clinically defined by the presence of a rubbery-to-firm disk-like mass that is often mobile, located directly inferior to the areolar region and extending concentrically from the nipple. It is distinct from pseudo-gynaecomastia (or lipomastia), which is an adipose tissue deposition without glandular proliferation, where no firm mass is palpable. Histological examination of mastectomy samples taken from males under 21 years of age for adolescent gynaecomastia show the incidence of breast cancer being extremely low [5]. The malignant lesion invariably involves the unilateral breast; is often hard, fixed and, eccentric; and may be associated with spontaneous bloody nipple discharge, axillary lymphadenopathy or overlying skin discolouration, dimpling or tethering (*peau d'orange*). A family history of gynaecomastia is reported in approximately 60% of cases [2]. The contributing factors for gynaecomastia need to be considered. These include hypogonadism, medication (notably antipsychotics, including the newer atypical agents, such as risperidone, as well as other drugs, for instance, spironolactone), alcohol, marijuana or anabolic steroid use. In such cases, the precipitating cause should be attended to first.

Three management options are available: (i) reassurance (i.e., no treatment), (ii) surgery and (iii) medication. The first is the safest option, although does not ameliorate symptoms and is best for small, pain-free cases of recent onset (<6 months). Surgery is usually a combination of direct excision of the glandular tissue and liposuction. Performing surgery is recommended after adult testicular size (Tanner Stage 5 puberty) is attained, as there may be regrowth of the breast tissue if performed earlier. Surgery may also involve complications, such as scarring, skin retraction and hyperaesthesia. Thus, it should be reserved

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