

Combined Surgical and Medical Treatment in an Adolescent with Severe Gynecomastia Due to Excessive Estradiol Secretion: A case report

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BACKGROUND

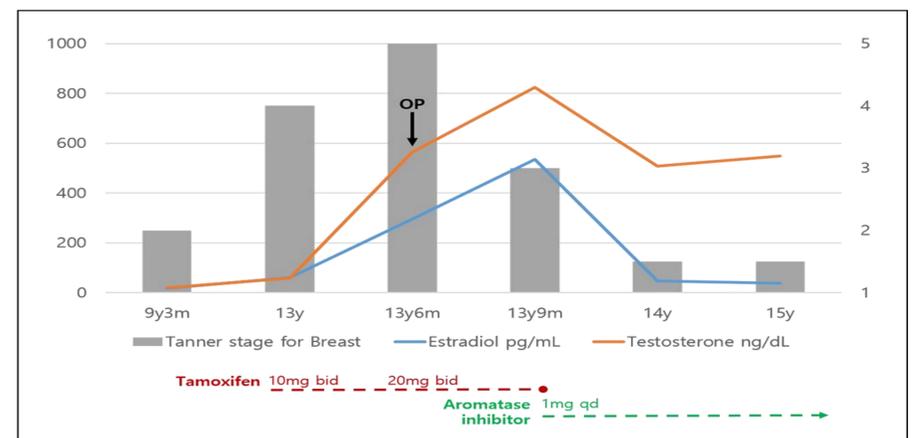
Gynecomastia develops due to the reversed estradiol-to-testosterone ratio in adolescence, and symptoms typically improve within two years. The causes vary widely, including estrogen excess and tumors, and surgical treatment is usually given in late adolescence because postoperative symptoms may recur in adolescents. There are no guiding recommendations for gynecomastia to date besides the suggestion to consider rapidly growing gynecomastia and breast tissue ≥ 4 cm as the pathologic condition. Therefore, this study reports a case of a pediatric patient with severe gynecomastia due to excessive estradiol secretion who showed a positive outcome after receiving surgical treatment combined with aromatase inhibitor administration. The study includes clinical and laboratory results from his first visit at 9 years and 3 months of age to last postoperative follow-up at 15 years of age, as well as the postoperative course of outcomes.

CASE PRESENTATION

A 9-year old boy visited to the Department of Pediatric Endocrinology for breast budding. At that time, the patient showed breasts at Tanner stage II and no abnormality on hormone tests. During a follow-up, both gynecomastia had progressed to Tanner stage III–IV at age 13. Tamoxifen 10 mg bid was administered; however, the condition rapidly progressed to Tanner stage V at 13.5 years. The evaluation of pathologic gynecomastia showed an increase of estradiol to 296 pg/mL (reference range[R]: 10-36) and microlithiasis in both testes. As the condition worsened, total mastectomy was performed at the age of 13.5 years while minimizing surgical scarring using the peri-areolar approach (Figure 1).

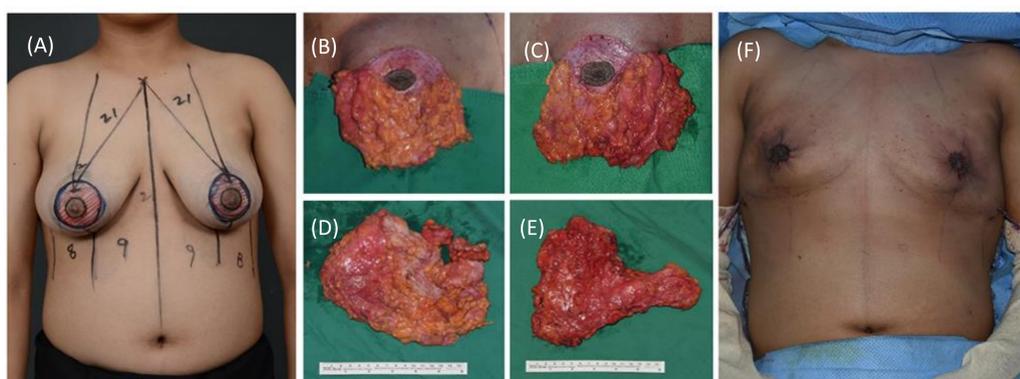
In two months, there was some improvement in breast enlargement, but the progression of breast budding was also observed along with the elevation of estradiol to 535 pg/mL. Based on the assessment that elevated aromatase activity had induced breast budding, we changed the medication to anastrozole (Arimidex) 1 mg once a day, after which the estradiol level improved to 38.5 pg/mL (Figure 2) and was maintained well in the two-year postoperative follow-up (Figure 3).

Figure 2. Changes in the serum estradiol and testosterone levels and the breast Tanner stage at each age in the patient.



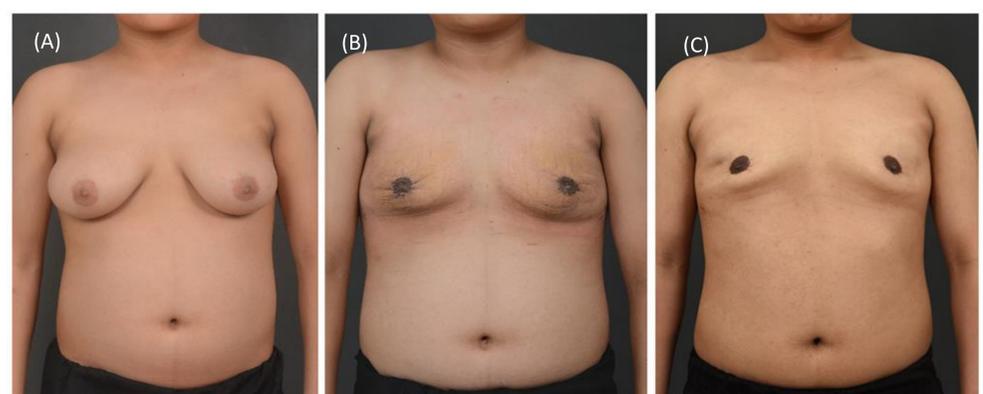
The figure shows the changes in estradiol and testosterone levels from 9 years and 3 months of age to 15 years of age, including a drastic reduction in the estradiol level after changing tamoxifen with aromatase inhibitor at 13 years and 9 months of age. Following the operation at 13.5 years of age, the Tanner stage of the breast was improved from 5 to 3, followed by a decrease in estradiol at 14 and 15 years of age with symptomatic improvement and maintenance at Tanner stage I–II.

Figure 1. Operative design and postoperative photos of the patient with severe gynecomastia



(A) Preoperative design photo. The red-hatched area was de-epithelized to preserve the pedicle toward the nipple areolar area. (B, C) Right and left breasts. (D, E) Right and left mastectomy breast tissue. (F) Immediate postoperative photo. Purse-string suture was used to reduce the volume of the breast skin flap to a circular shape.

Figure 3. Follow-up photos of pediatric patient with severe gynecomastia



(A) Preoperative finding. (B) Two-week postoperative finding. (C) Two-year postoperative finding.

CONCLUSION

This case report shows a combined plastic surgery and appropriate medical management bring a positive outcome in severe gynecomastia patient, and it suggests a need for endocrine screening in pediatric gynecomastia patients.

