TransFem E2 Implants Study

A descriptive study of estradiol levels in transfeminine individuals who received estradiol implants as standard care in Hunter New England (HNE) Health Services

Mesure J[1], Afrin S[2], Fitzgerald S[3], Luu J[4,5], and Wynne K[4,5]

[1]Sexual Health, John Hunter Hospital, Newcastle, NSW, Australia
[2] Medicine, John Hunter Hospital, Newcastle, NSW, Australia
[3] Primary Health Network, Hunter New England & Central Coast, NSW, Australia
[4] Diabetes & Endocrinology, John Hunter Hospital, Newcastle, NSW, Australia
[5] School of Medicine & Public Health, University of Newcastle, NSW, Australia

Dr Jo Mesure
HNE Sexual Health - Pacific Clinic
670 Hunter St, Newcastle West, NSW 2302
joanna.mesure@health.nsw.gov.au
(02) 4016 4536

Introduction

Gender diversity is one facet of human diversity, with an estimated 0.1-2% of the population identifying as transgender or gender diverse.(1) Gender-affirming hormone therapy aims to reduce gender dysphoria and align physical appearance more closely with gender identity,(2) and may be associated with better mental health outcomes.(3-6) Estradiol implants provide one option for feminising therapy,(7) and are preferred by many patients; however, they are not TGA approved and can currently only be sourced from compounding pharmacies.(8)

Implants may provide a lower-risk method of feminising therapy as the subcutaneous route of administration avoids first-pass metabolism, which should confer a lower risk of dyslipidaemia and venous thromboembolism.(9,10)

This study describes results of surveillance of serum estradiol levels for a series of clients who received estradiol implants for feminising hormone therapy as part of standard care. Clients were advised to have monitoring at one month, three months, then every three months following implant insertion.

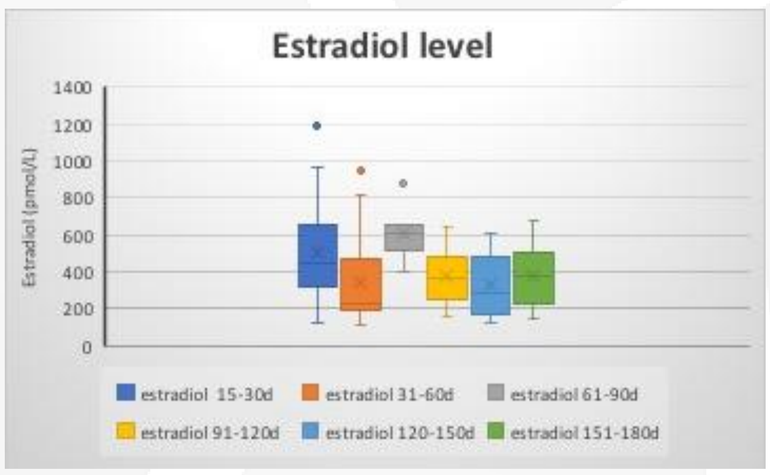
Aim

To assess the proportion of serum estradiol results within the target range of 250-1000pmol/L,(7) to better inform decisions regarding use of implants and provide direction for further research.

Methods

Electronic medical records (EMR) were audited retrospectively for a cohort of consecutive clients who received estradiol implants as standard care between 1st June 2019 - 31st January 2022. Data collected included age, BMI, implant dose, any reported adverse events and results of serum estradiol levels measured following implant insertion.

Figure 1. Box plot of serum estradiol levels following subcutaneous insertion of 100mg estradiol implants (n=49).



Results

- 33 individuals had 67 implant insertion procedures during the 32 month time period (1 – 4 insertions/person)

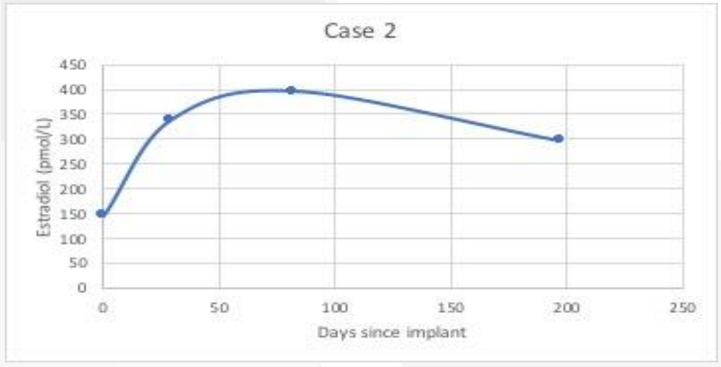
Implant dose:
- 50mg estradiol: 4 (5.9%) implant insertions
- 100mg estradiol: 49 (73.1%) implant insertions
- 150mg estradiol: 8 (11.9%) implant insertions
- 200mg estradiol: 6 (9.0%) implant insertions

Serum estradiol results (n = 136) for all implant insertions:
- Serum estradiol range 137-2009 pmol/L
- 94 (69.1%) results were to target
- 35 (25.7%) results were low (< 250 pmol/L)
- 7 (5.1%) results were high (> 1000 pmol/L)
- 1 very high serum estradiol result of 2009 pmol/L, with no associated symptoms reported

Duration of effect:
- Average interval between implants was 277 days (IQR 173 – 362 days), for 32 cases where there was a subsequent implant, or approximately 9 months.

Adverse events:
- 1 vasovagal episode
- 1 report of insertion site pain, resolved without treatment

Figure 1 and Table 1 refer to serum estradiol levels measured during the six months following insertion of 100mg implants (n=49 implant insertions).



Case 1 and Case 2 are representative examples of serum estradiol levels over time, following insertion of 100mg estradiol implants in two transfeminine individuals.

	15-30 days	31-61 days	61-90 days	91-120 days	120-150 days	151-180 days
Mean	465	307	610	380	327	377
Median	450	221	608	349	283	383
Inter Quartile Range	324-532	193-397	511-654	264-476	188-448	228-496

Table 1. Serum estradiol levels in pmol/L following subcutaneous insertion of 100mg estradiol implant (excluding outliers).

Limitations

This retrospective study has several limitations including small patient numbers and reliance on information recorded in EMR. There may be selection bias caused by testing more frequently in individuals with higher serum estradiol levels.

Conclusions

This small cohort study suggests that implants are effective for attaining therapeutic serum estradiol levels when used as feminising hormone therapy in transfeminine people. Further collaborative research to learn from experiences throughout Australia is needed to be able to provide more accurate recommendations regarding optimal implant dose, duration of effect and influence of other factors such as body habitus on serum estradiol levels obtained using implants. Further evidence for safety and efficacy of implants may assist in advocacy for a TGA approved product in the future.

Acknowledgements and disclosures

The authors have no conflict of interest to declare and would like to acknowledge our trans and gender diverse community who entrust us with their care

Ethics approval was obtained from Hunter New England Human Research Ethics Committee [2022/ETH00055].

References

1. Goodman M, Adams N, Corneil T, Kreukels B, Motmans J, Coleman E. Size and Distribution of Transgender and Gender Nonconforming Populations: A Narrative Review. Endocrinol Metab Clin North Am. 2019;48(2):303-21.
2. Heath RA, Wynne K. A guide to transgender health : state-of-the-art information for gender-affirming people and their supporters. Santa Barbara, California: Praeger, an Imprint of ABC-CLIO, LLC; 2019. xviii, 268 pages.
3. Turban JL, King D, Kobe J, Reisner SL, Keuroghlian AS. Access to gender-affirming hormones during adolescence and mental health outcomes among transgender adults. PLoS One. 2022;17(1):e0261039.
4. Van der Miesen AIR, Steensma TD, de Vries ALC, Bos H, Popma A. Psychological Functioning in Transgender Adolescents Before and After Gender-Affirmative Care Compared With Cisgender General Population Peers. Journal of Adolescent Health. 2020;66(6):699-704.
5. White Hughto JM, Reisner SL. A Systematic Review of the Effects of Hormone Therapy on Psychological Functioning and Quality of Life in Transgender Individuals. Transgender Health. 2016;1(1):21-31.
6. Unger CA. Hormone therapy for transgender patients. Transl Androl Urol. 2016;5(6):877-84.
7. AusPATH. Australian Informed Consent Standards of Care for Gender Affirming Hormone Therapy. Australia 2022.
8. Cundill P. Hormone therapy for trans and gender diverse patients in the general practice setting. Australian Journal of General Practice July 2020;49(7).
9. Shatzel JJC, K. J. & DeLoughery, T. G. Thrombotic issues in transgender medicine: A review. . American journal of hematology, 92(2), 204–208. 2017:92(2):204-8.
10. Speroff L. Transdermal hormone therapy and the risk of stroke and venous thrombosis. Climacteric-The journal of the International Menopause Society. 2010:13(5), 429–32.

NSW GOVERNMENT