

Strain Elastography Assessment of Intratesticular Lesions: 3 Case studies with different outcomes

Steve Klarich, Consultant Sonographer, Walsall Healthcare NHS Trust

Introduction

Strain elastography is a form of ultrasound imaging that allows for non-invasive assessment of superficial lesions. Manual pressure is applied with the probe which allows for measurement of tissue deformation under pressure - the harder an area of tissue is, the less it deforms¹. This is associated with a higher probability of malignancy due to the way in which changes occur in tissue during malignant development². Testes are ideal for this technique, with their superficial position allowing for easy compression. The following three case studies illustrate how elastography can be applied to different testicular lesions.

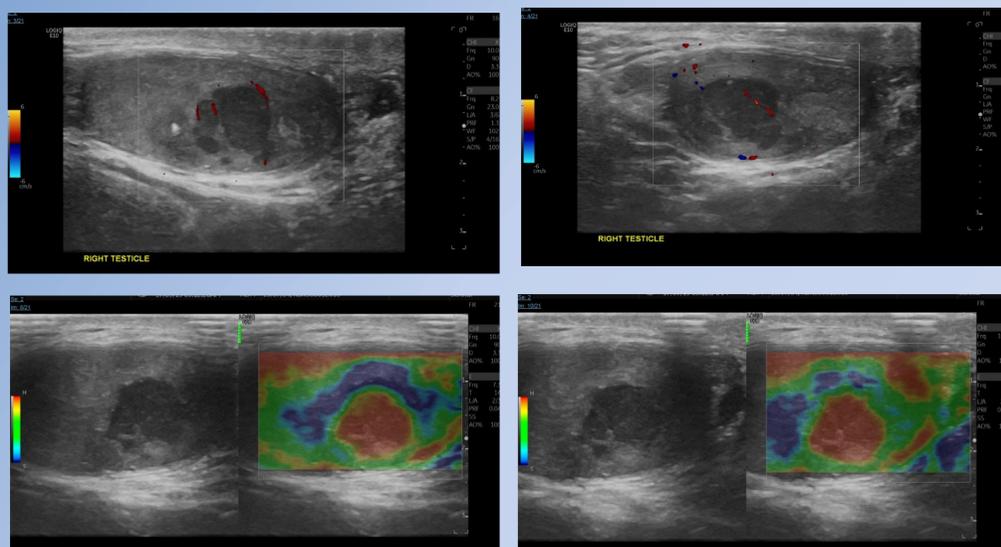
Case 1

Patient with 6 month history of pain and lump in right testicle. Ultrasound demonstrated a solid, irregular and hypoechoic intratesticular lesion with slight internal vascularity on colour Doppler. Initial impression: malignancy, likely seminoma.

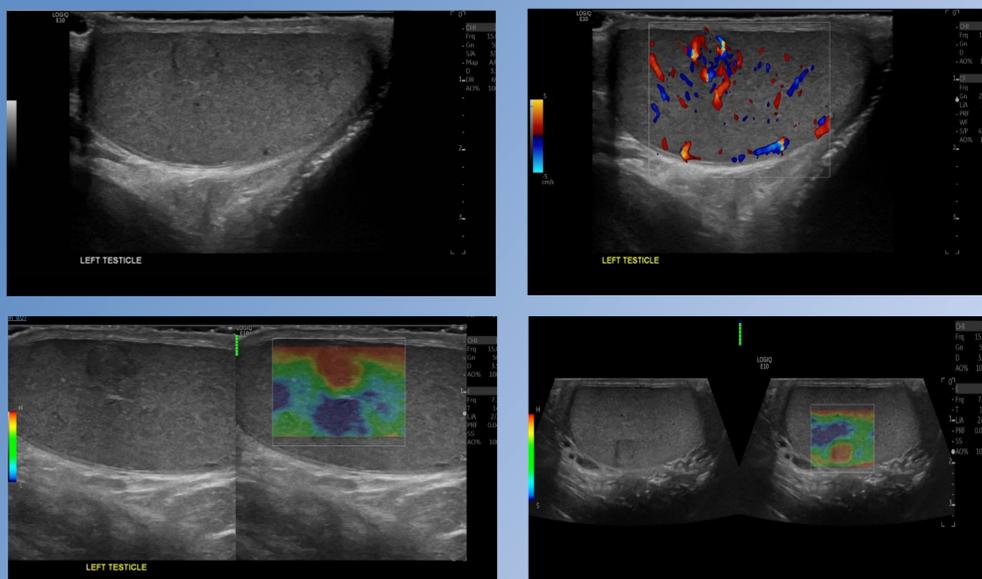
Elastography showed significant, uniform increase in hardness of lesion compared to surrounding testicular parenchyma, increasing suspicion of malignancy.

Bloods showed raised beta hCG and LDH, AFP was normal. CT revealed para-aortic and retrocrural lymphadenopathy, likely metastatic.

Patient underwent orchidectomy with histology showing 100% classic seminoma.



Top row above: B mode images with colour Doppler of ? Seminoma
Bottom row: significantly increased hardness of the lesion compared to surrounding parenchyma on elastography.



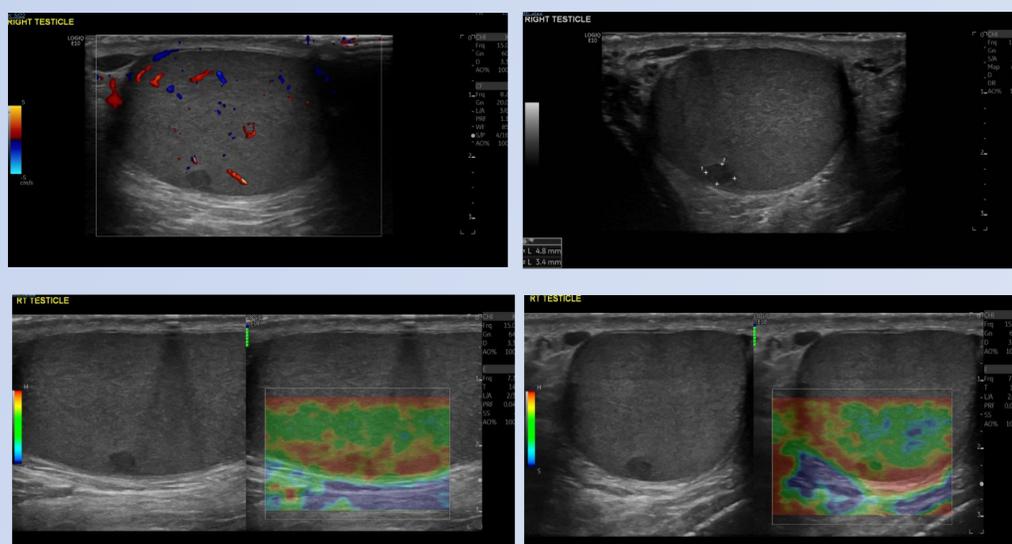
Top row above: isoechoic mass with internal vascularity.
Bottom row: Elastogram showing significant increase in hardness of lesion compared to surrounding tissue.

Case 3

Patient with history of left testicular pain. Ultrasound showed normal left testis. The right testis contained a small hypoechoic and avascular area. Initial impression is of a benign lesion.

Elastography showed mixed hard and soft areas, with an almost identical pattern compared to the surrounding parenchyma, reassuring that the lesion is likely benign.

Tumour markers were all normal. Patient has had two further scans, demonstrating no interval change in the lesion. Differential diagnoses are a benign non-neoplastic lesion such as an area of ischaemia or focal post-infective change.



Top row above: small hypoechoic but avascular lesion.
Bottom row: elastogram showing similar appearances between the lesion and surrounding parenchyma.

Conclusion

Elastography can form a useful part of a multi-parametric approach to assessment of a testicular lesion. It can add confidence to a provisional diagnosis, however management decisions should always take into account all diagnostic factors, including B mode appearances and bloods.

References

1. Goddi A, Sacchi A, Magistretti G, Almolla J, Salvatore M (2012) *Real-time tissue elastography for testicular lesion assessment*, Journal of European Radiology, Vol 22, issue 4, pp 721-730
2. Dietrich CF, Barr RG, Farrokh A, Dighe M, Hocke M, Jenssen C, Dong Y, Saftiou A and Havre RF (2017) *Strain Elastography – How To Do It?*, Ultrasound International Open, vol. 3, pp137-149.