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Ultrasound-guided injections in primary care:

evidence, costs, and suggestions for change

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INTRODUCTION

Musculoskeletal (MSK) ultrasound has been used increasingly over the past decade, by non-radiologist hospital doctors, extended scope physiotherapists (ESPs), and to a lesser extent by GPs in primary care, both for diagnostic purposes and to guide therapeutic interventions. The reduction in equipment costs, together with improved image resolution and an increase in educational opportunities, seem to have facilitated these changes.

MSK ultrasound is a highly effective diagnostic modality and is regularly used in secondary care to guide MSK interventions including joint and soft-tissue injections.

WHY USE ULTRASOUND TO GUIDE INJECTIONS?

Recent evidence, based on large randomised controlled trials (RCTs) and meta-analyses, demonstrates improved accuracy, efficacy, and cost-effectiveness of ultrasound-guided joint and MSK soft-tissue injections when compared with landmark-guided injections (LMGIs).

In 2015 the American Medical Society for Sports Medicine (AMSSM) published a position statement reviewing the current evidence for ultrasound-guided injections (USGIs), focusing on the accuracy, efficacy, and cost-effectiveness of these interventions.[1] It demonstrated high-quality evidence that USGIs are more accurate than 'blind' or LMGIs and 'good' evidence that USGIs are more effective than LMGIs specifically for large joints, inflamed joints, subacromial bursitis, carpal tunnel syndrome, and de Quervain's tenosynovitis (Figure 1). There was also limited evidence that other targets have improved outcomes following USGIs, as well as evidence suggesting that USGIs are more cost-effective than LMGIs.[1]

Since the AMSSM position statement in 2015, one further systematic review of 12 RCTs has demonstrated improved accuracy as well as efficacy rates for USGIs over LMGIs and '*... recommend*[s] *routine ultrasound guidance for intra-articular and peri-articular injections*'.[2]

This evidence supports the conclusion that USGIs are superior, both in terms of accuracy and efficacy, to LMGIs and are the preferred option, delivering superior outcomes to patients.

Alongside this, in the last 10–15 years there seems to have been a shift in the care pathway, from GPs performing anatomically guided MSK injections, to the current climate, whereby patients are referred to secondary care for the same procedure to be performed under ultrasound guidance. This article is not designed to question the rationale behind these decisions but to propose a system to improve the availability of ultrasound-guided interventions for patients.

CURRENT ISSUES AND WAITING TIMES

At present the demand for hospital-based, ultrasound-guided injections far outweighs the capacity that most trusts are able to provide. Current NHS waiting times for ultrasound-guided MSK procedures range from 8–12 weeks on average, despite most trusts instituting waiting time initiatives. Patients awaiting joint or soft-tissue injections are frequently in pain, and current waiting times are therefore unacceptable and unsustainable. A large proportion of these patients already have an established diagnosis and the referring clinician is requesting a technical procedure to be performed by an expert.

A NEW PARADIGM FOR PRIMARY CARE

Local, intermediate-care MSK services provide one option for managing this issue. In this scenario, GPs are able to refer patients who require such procedures to community-based MSK specialists, for instance, ESPs, GPs with a special interest (GPwSIs), or sport and exercise medicine doctors, reducing costs and improving efficiency via local management.

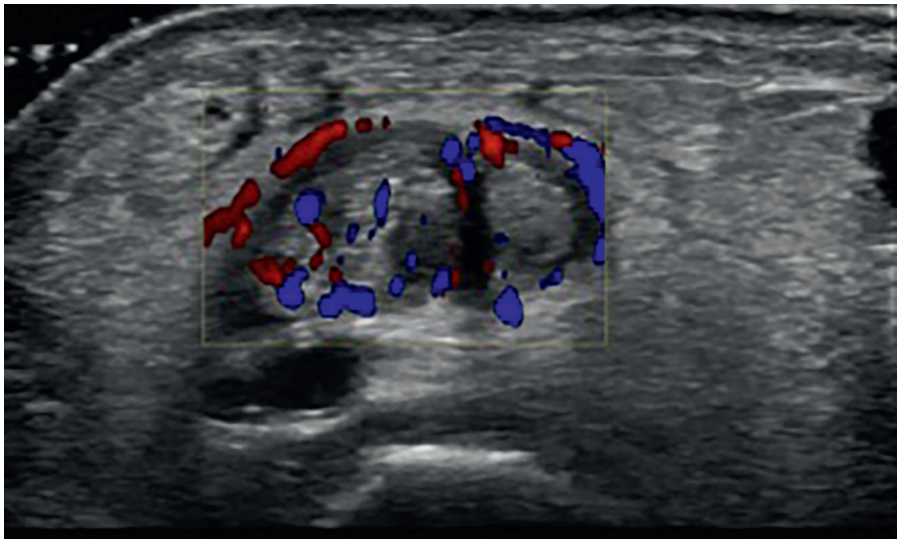

Figure 1. Ultrasound demonstrating de Quervain's tenosynovitis, with thickening of the abductor pollicis longus tendon, excess fluid, and increased vascularity within the tendon sheath.

A further solution would be to train GPs to perform some of these USGIs in the primary care environment. The aim would not be to train GPs to perform diagnostic MSK ultrasound scans but to enable them to use ultrasound to facilitate optimal needle placement for joint and soft-tissue injections. At the current time, most GP surgeries have either a GP on site or regionally who can provide minor surgical and contraceptive procedural skills. It would make sense for GPs to be providing similar ultrasound-guided procedural skills at a local level.

With the ever-reducing costs of point-of-care ultrasound machines and the vast number of educational opportunities available for clinicians wanting to train in MSK ultrasound, the switch in ethos seems inevitable.

When the diagnosis is uncertain, the recommendation would be for the primary care clinician to continue to refer for imaging. However, in the case of a trigger finger or knee osteoarthritis, where the clinician has already established a diagnosis, the ultrasound would simply facilitate accurate needle placement, offering the patient 'gold-standard' care.

At present a new, entry-level 'laptop' MSK ultrasound machine costs in the region of £10 000–£11 000, although such a machine can be rented on a monthly basis for £250–£500. However, with ultrasound image quality constantly improving, a future cost-effective alternative might be the use of smaller and less expensive hand-held portable ultrasound machines to guide injections.

There are a multitude of 'basic skills' ultrasound courses that would provide the clinician with an adequate starting point. A 1-year, part-time, Postgraduate Certificate in MSK ultrasound costs in the region of £1500–£2000 and gives the clinician the skills to diagnose many MSK conditions. This level of qualification, however, would not be necessary for the clinician simply looking to perform the more basic USGIs. Practical joint injection courses are now available, some of which focus on USGI of soft-embalmed cadavers, realistically simulating real-life injection procedures. These courses range from £300 for a 1-day course, up to around £900 for a more comprehensive 2-day option.

CONCLUSION

In summary, current research clearly supports the use of ultrasound to facilitate accurate and effective joint and soft-tissue injections. This remains the gold-standard technique. The current climate, whereby large numbers of patients are referred to secondary care for all USGIs, is unsustainable. There needs to be a shift in focus, whereby some of the common ultrasound-guided procedures are performed by GPs in a primary care environment, providing patients with optimal, local care, while reducing healthcare costs and the burden on secondary care.

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Patient consent

The patient consented to the publication of this article and the image.

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The authors have declared no competing interests.

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