



Open Upright MRI in the Real World

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Background

The spread of open upright MRI scanning is a relatively new development in the UK and such scanners are seldom, if ever found in NHS sites. The intricacies of such technology are of little interest to some in the medical profession, but to patients it can open up a field of imaging from which they may have previously been excluded.

Objectives

The purpose of this poster is to demonstrate that the need for open upright MRI isn't always based on performing weight-bearing studies. This new innovation allows us to image patients who may never have been able to undergo MRI due to inability to lie flat or to severe claustrophobia.

Discussion

- In our first year of service nearly 1/3rd of patients referred for upright MRI of the lumbar spine had reportable findings relating to the spinal or nerve root canals that were in some way differentiated by upright MRI scans.
- Due to the changes in dimensions in the spine and spinal canal, upright and positional MRI can also assist in the identification of dynamic instability.
- A small proportion of patients required open or upright scanning due to physical deformities, or gastrointestinal or respiratory conditions that would prevent enclosed and/or recumbent positioning (**Figs 1 and 4**). In total, 63% of patients referred could not have had the investigations they required in a conventional scanner.
- The NHS estimate around 10% of the UK population are affected by claustrophobia during their lifetime¹ and research has shown that between 1.2% and 2.3% of MRI examinations are abandoned due to anxiety^{2,3}. Based on NHS 2013/14 figures for MRI activity in England⁴ this equates to between 31,320 and 60,030 patients failing to start or complete their MRI examination.
- 31% of our patients in the first year were claustrophobic and would not otherwise be able to be scanned without sedation or anaesthesia. Since 2015, we have seen a steady increase in the proportion of claustrophobic referrals, and by the first quarter of 2017 this had risen to 47% of our workload (**Fig 2**).
- Overall, 27% of our patients were scanned upright, of which, 23% were either claustrophobic or unable to lie flat (**Fig 3**).

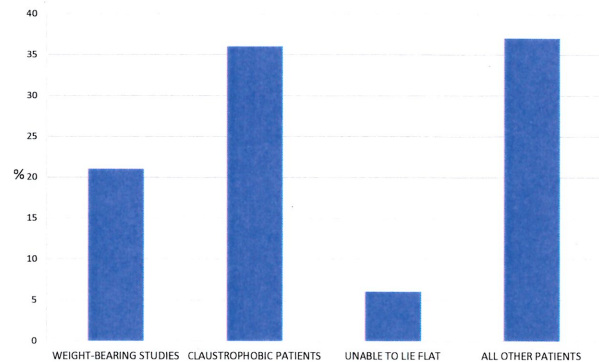


Fig 1 Breakdown of patient referrals from 2015 to 1st quarter of 2017

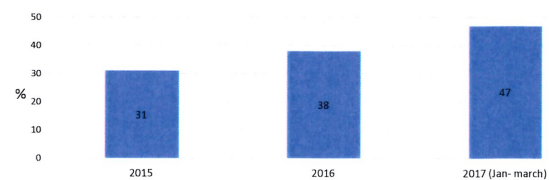


Fig 2 Percentage of referred patients with claustrophobia

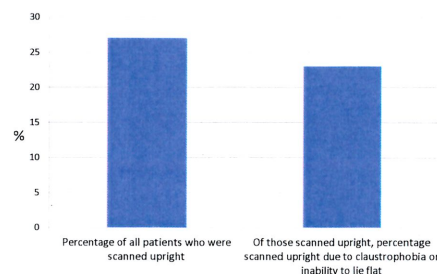


Fig 3 Total number of upright scans performed and the percentage of them performed due to claustrophobia or inability to lie flat



Fig 4 Semi recumbent position for brain MRI

Conclusion

- When we started out, there was excitement about the possibilities of weight bearing studies. Patients requiring upright scans make up 27% of our workload, these patients would otherwise have been excluded from MRI.
- As we have become recognized as a more comforting and inviting environment, we have seen an increase in our claustrophobic referral base and for the first quarter of 2017 this reached 47% of all of our referrals.
- 63% of our patients came to us because they were either claustrophobic, unable to lie flat or required weight bearing studies.

References

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