

## EDITORIAL

## Side marker creep: have radiographers changed their side marker habits?

Michael Fuller, ADDR, BHA, MIR

Department of Medical Imaging, Flinders Medical Centre, Bedford Park, South Australia, Australia

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Most radiographers will be familiar with the term *exposure creep* which refers to the tendency by radiographers to set exposure factors which overexpose the patient with radiation when performing digital radiography.<sup>1</sup> This edition of JMRS includes a clinical audit by Barry et al.<sup>2</sup> which raises the question of whether another less obvious *creep* has been lurking in the shadows of digital radiography: *side marker creep*. A point of difference between *exposure creep* and *side marker creep* is that the former has been creeping up and the latter creeping down.

Barry et al.<sup>2</sup> conducted a clinical audit of side marker usage by radiographers in a paediatric hospital. The authors reported a correct lead side marker visible within the primary beam in only 22% of the 400 images included in the audit sample and went on to conclude that “The findings from this clinical audit identified numerous opportunities to improve practice”.<sup>2</sup>

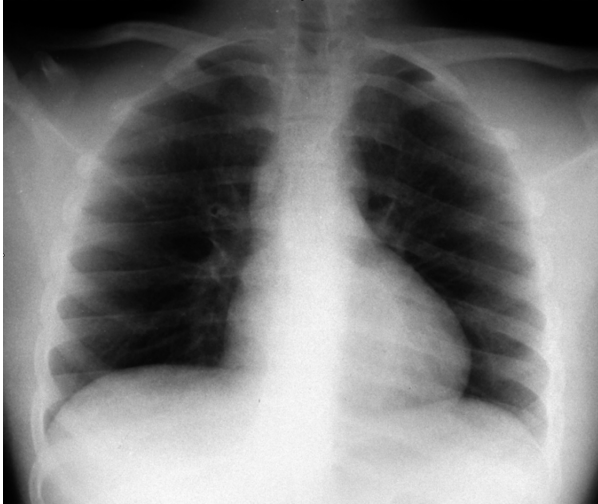
There are reports in the literature of patient harm associated with incorrect side identification on radiographic images. A 2002 report by Finnbogason, Bremmer, and Ringertz<sup>3</sup> of side marker errors in two cases of neonatal pneumothorax makes for disturbing reading. In one of the cases the outcome was iatrogenic death. My experiences in neonatal portable chest radiography suggest that the cardiac/mediastinal contours are variable. An ambiguous cardiac contour can render side identification on AP chest images impossible. This difficulty is exacerbated in cases of neonatal chest radiography in which there is patient rotation and/or pathology. It is noteworthy that the report by Barry et al.<sup>2</sup> found that radiopaque side marker use in mobile chest radiography was particularly low. The authors reported that “. . .of the 56 chest X-ray images attained over the course of the audit, only 3 (5.4%) had a lead marker present. . .”<sup>2</sup>

Another area of heightened risk is the emergency room where there can be rapid interventions following chest radiography in trauma patients. This potential risk of failing to use radiopaque side markers in the emergency room was brought into sharp focus for me when one of my

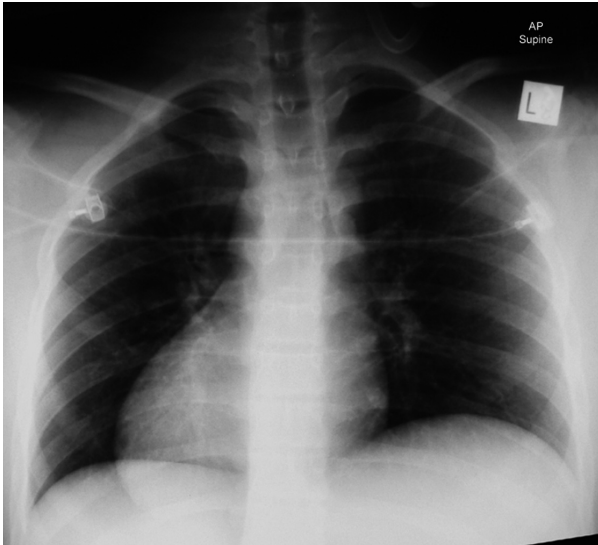
colleagues was called to the emergency room following the arrival of a priority one patient. This patient had been previously stabilised at another hospital where several X-ray examinations had been performed. The chest radiograph accompanying the patient did not show a side marker (Fig. 1). A repeat chest X-ray examination was ordered on the arrival of the patient in our Emergency Department. This chest X-ray demonstrated that the patient had situs inversus (Fig. 2). This was not an ambiguous finding because the radiographer had placed a radiopaque side marker within the primary beam. This case demonstrated to me the safety benefits of this ‘old-fashioned’ practice.

I would argue that the radiopaque side marker is to radiography as the seatbelt is to travelling in a car. It should be an automated reflex to *buckle up* a seatbelt when you are first seated in a car. Equally, it should be an automated reflex to place a radiopaque side marker within the primary X-ray beam before you expose the patient to radiation. My habitual use of a radiopaque side marker (with occasional failings) was a practice developed during my clinical training. Radiographers should consider the potential risks to patients over a working lifetime associated with failing to use a radiopaque side marker. Furthermore, discouraging students from using radiopaque side markers should be condemned as a dangerous practice. A failure to develop this and other safe practices as a student could be a precursor to a working life of bad habits.

It should also be considered that the action of placing a radiopaque side marker within the primary X-ray beam could be considered a *cognitive forcing function*: the action of placing the radiopaque side marker is forcing the radiographer to think about its correct placement. If the placing of a radiopaque side marker is characteristically cognitive, the equivalent postprocessing annotation can be characteristically heuristic, particularly when radiographers are ‘processing the ICU round’ imaging.



**Figure 1.** Initial chest X-ray without a side marker.



**Figure 2.** Subsequent chest X-ray with a radiopaque side marker.

Another related point of interest was identified in an article by Khosa et al. in 2015.<sup>4</sup> The authors noted the importance of "... placement of markers so that they do not obscure anatomy".<sup>4</sup> My observation of current clinical practice is that most radiographers do not consider whether postprocessing annotations are placed over bony anatomy, particularly with chest radiography. It is a relatively easy task to position annotations so that they are not overlying patient bony anatomy.

A further benefit of using initialled radiopaque markers (i.e. markers which incorporate the radiographers' initials) is what might be called the *signed-artwork effect*. If you use a radiopaque side marker that includes your

initials, you are attaching your name to your images. Your reputation as a radiographer is on display and your work is under continuous review.

A 2012 study by Gibson and Davidson<sup>1</sup> reported that *exposure creep* identified in ICU portable chest radiography could be halted with a strategic intervention. A similar finding was reported by Livingstone et al.<sup>5</sup> in 2007. It would be worth investigating whether an intervention such as a periodic audit of radiopaque side marker use could reduce side marker errors.

The former practice of side labelling after the radiograph had emerged from the wet film processor was no different to the current practice of side marking as a postprocessing event in digital radiography: the risks are the same. The use of radiopaque side markers is not anachronistic. Placement of a radiopaque side marker within the primary beam is not an outdated practice – it is a safe practice.

## Conflict of Interest

The author declares no conflict of interest.

## References

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Michael Fuller,  
Department of Medical Imaging  
Flinders Drive, SA Medical Imaging (SAMI), Flinders  
Medical Centre, Bedford Park, SA 5162,  
Australia.  
Tel: +61 8 82044310  
Fax: +61 8 82046193  
E-mail: michael.fuller@sa.gov.au