



Reducing radiation exposure and cancer risk for children with scoliosis: appropriate epidemiological technique and statistical rigour is essential

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I read the recent publication in *Spine Deformity* [1] titled “Reducing radiation exposure and cancer risk for children with scoliosis: EOS the new gold standard” and applaud efforts to help reduce radiation exposure to children.

Whilst the advent of EOS machines does assist in reducing radiation exposure, there are many other methods to reduce radiation such as collimated and pencil beam scanning, low-dose radiographs/high sensitivity receivers and PA views. These are less expensive than EOS and easier to accommodate within existing hospital infrastructure. Additionally, clinicians can directly reduce radiation exposure by ordering less frequent imaging.

The sentinel paper by Doody et al. [2] from USA was based on imaging in the 1940–60s with estimated radiation exposures at least 20 times higher than contemporary standard radiographs—I believe that this contributed to their report of an increased breast cancer mortality.

Our team published outcome data regarding the actual incidence of cancer in children who had frequent spine radiographs [3]. We did not find an increase in cancer rates and concluded that “radiation exposure and possible exposure to circulating metal ions as a result of routine instrumented spine surgery in children since 1979 is not associated with an increased risk of cancer in up to 36 years of follow up”. The standardised incidence ratio (SIR) for females was 0.83 (95% CI 0.33–1.70) and for males 1.33 (95% CI 0.36–3.40).

Whilst the use of historic data from the horrific atomic bombs in Japan provides an index of the effects of radiation, it only provides basic information and as such estimates of

cancer risk are not exact. Our study, with a very different conclusion, provides a more realistic analysis of cancer incidence in a large population with a validated Cancer Registry and, more importantly, used appropriate modern epidemiological statistical analysis. The latter is so very essential when conducting analysis of data for epidemiological purposes especially in cancer research.

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References

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