

CT scans during pregnancy

Information for patients



Leeds Major Trauma
Centre

Trauma accounts for 10% of all deaths worldwide per year. A traumatic event is experienced in 6-8% of all pregnancies. The trauma sustained can cause serious and in some cases life threatening complications for both the pregnant individual and their unborn child (foetus in medical terms). The complications to the pregnant individual include bleeding, injury to the placenta or womb, early labour, a condition leading to uncontrolled bleeding known as disseminated intravascular coagulation and death. The complications to the unborn baby include early delivery, disruption of blood supply to the baby causing the brain to be starved of oxygen and death¹.

As a result of your injuries, you need to undergo an urgent CT scan. Having these scans is of medical benefit to you as it will allow the clinical staff to identify any life threatening conditions and decide upon your subsequent care. The mechanism of injury and the findings on clinical examination will help decide what type of scan is required. This may be a limited CT scan of a specific area or when there is concern about more serious injury this may be a CT scan from the head to the pelvis or lower legs.

For pregnant individuals this will mean their unborn baby will be exposed to a small dose of radiation. The main risk associated with this is there is an increased risk of fatal childhood cancer. To help explain this risk further, it is important to understand that the underlying risk of childhood fatal cancer is 1 in 500 (0.2%) for those unborn babies that are not exposed to medical radiation during pregnancy.

The 2009 report of the Health Protection Agency², found the associated additional risk of childhood cancer as 1 in 10,000 per mGy foetal dose (0.01% per mGy).

What do the percentages mean?

Further risks of less than 0.5% are considered to be low, whilst additional risks of less than 0.01% are considered to be very low².

Below is an explanation of what the actual risk is for the type of scan performed. This will help you understand what the actual risk is to the unborn baby.

Trauma cases only requiring CT scans of the head and neck

The additional risk of fatal childhood cancer as a consequence of these scans less than 0.001%, which is considered to be very low. For comparison, the natural underlying risk of fatal childhood cancer is 0.2% (1 in 500).

Haemodynamically stable trauma cases requiring CT head to pelvis

A haemodynamically stable trauma case is one where an injured patient has a heart rate and blood pressure within the normal range for their age. However this does not mean they do not have a serious injury that needs urgent treatment.

The additional risk of fatal childhood cancer as a consequence of these scans is approximately 0.15%, which is considered to be low. For comparison, the natural underlying risk of fatal childhood cancer is 0.2% (1 in 500). As a result of these scans the childhood fatal cancer risk is now approximately 0.35% (1 in 290) - this is considered to be low. The advice of the Health Protection Agency is that termination of the pregnancy would not be justified solely on the basis of the radiation risk.

Haemodynamically unstable trauma cases requiring CT head to pelvis

A haemodynamically unstable trauma case is one where an injured patient has a heart rate and blood pressure that is not normal for their age. These patients are often severely injured, are bleeding from their injuries and require urgent treatment to stop the bleeding. These patients therefore require a specific CT scan that looks for signs of active bleeding.

The additional risk of fatal childhood cancer as a consequence of these scans is approximately 0.25%, which is considered to be low. For comparison, the natural underlying risk of fatal childhood cancer is 0.2% (1 in 500). As a result of these scans the childhood fatal cancer risk is now approximately 0.45% (1 in 220) - this is considered to be low. The advice of the Health Protection Agency is that termination of the pregnancy would not be justified solely on the basis of the radiation risk.

Are there any other risks to the baby associated with this investigation?

As part of this investigation, iodinated contrast (also commonly referred to as X-ray dye) will be injected in a vein, usually in your arm. This is a colourless liquid which contains iodine. It allows blood flow to be seen and therefore bleeding to be identified on the images.

There is a small risk to you associated with the use of x-ray dye. Adverse effects (or side effects) include but are not limited to worsening of kidney function and allergic reactions. The team will take steps before and after the injection to minimise the risk to you. There is no medical evidence that contrast media can harm the unborn baby or foetus, but at the same time there are no large studies that conclusively prove that it is safe. Theoretically there is a small risk of thyroid suppression in the foetus. This will be identified by measuring thyroid function in the first week after birth³.

Who can I discuss my specific concerns with?

If you are an inpatient you can discuss your concerns with the team looking after you. If you have been discharged you should approach your midwife, General Practitioner (GP) or the antenatal team looking after you to discuss any concerns you have.

References

1. Tibbott J, Di Carlofelice M Menon, R, Ciantar E. Trauma and pregnancy. TOG The Obstetrician and Gynaecologist. 2021; 23(4):258-264.
2. Protection of pregnant patient during diagnostic medical exposures to ionising radiation. Advice from the Health Protection Agency, The Royal College of Radiologists and The College of Radiographers, 2009.
3. The Royal Australian and New Zealand College of Radiologists. Iodinated Contrast Media Guideline. Sydney: RANZCR; 2018. (Endorsed by the Royal College of Radiologists).



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