

EOS – a Revolutionary Low-dose Imaging for Spine and Leg*Wong J**Department of Imaging and Interventional Radiology, Prince of Wales Hospital, Hong Kong*

EOS is an ultra-low-dose X-ray imaging system which is newly put into service in the Prince of Wales Hospital since August 2015. Our EOS system is also the first system that installed in Hong Kong. The EOS uses a Nobel Prize winning technology that was invented by Professor Georges Charpak. According to studies, the radiation dose of EOS in spine imaging is reduced by 50% to 85% when compared with digital radiography but maintaining a remarkable image quality. Moreover, it is noted that there is about 95% radiation reduction when compared with basic computed tomography in similar scanning.

With the implementation of the EOS low-dose imaging system, patient suffering from adolescent idiopathic scoliosis (AIS) is most benefited. AIS is commonly seen in teenagers aged from 10 to 18 (a radiation sensitive group), who require routine imaging followup for every six months to assess the severity of disease and the efficacy of therapeutic brace. The EOS low-dose imaging system can greatly reduce the hazardous effect of radiation and allow surgeon to have more complete and long term evaluation.

Apart from the benefits in radiation dose reduction, EOS system provides a simultaneous bi-plane full-body scanning in a standing functional position. The bi-plane data is important for building up a 3D model which can allow surgeon to have a 360 degree visualisation of the spine and lower extremities orientation. Furthermore, the auto-generation of 3D measurements information gives a better understanding on the disease profile. Finally the standing acquisition of image data allows accurate posture assessment of patient which is of utmost importance for surgeon to understand precisely the functional factors of the spine or leg problem.

As this is a completely new imaging system and the 3D modeling techniques requires more human input, a work group collaborating with orthopaedic surgeons is formed for the optimisation of the system.