

An evaluation of Moldcare product as an immobilization Head Rest for Head & Neck cancer patients

UK NHS Site*

<Challenges>

The first cohort of Head and Neck (H&N) cancer patients were treated at our department in 2018. Patients are treated using a VMAT technique with daily CBCT. All geometric and rotational set-up errors are corrected using a 6DoF robotic couch. The immobilization Head Rest (HR) has evolved since 2018 from the **initial Double Shell Positioning System (DSPS) to a Standard Headrest (SHR) and finally to a SHR with Moldcare combination (SHRMC)**.

In an effort to evaluate the effectiveness of these three different HR systems, we completed an audit comparing the systematic and random errors (translations + rotations) for the 3 HRs. We also used a questionnaire to collect data on radiographers' experiences and opinions using the different HRs.

<Application>

On-line imaging results indicated that our initial HR immobilization system (DSPS) was limited in reducing random translational and rotational set-up errors. This suggested that the reproducibility and stability of the HR immobilization could be improved. The SHR was then used, however an analysis of daily CBCTs indicated that this option potentially had limitations in producing a posterior head/neck conformal support for all patients. The Moldcare product was introduced in an effort to produce a high level of conformity to the posterior head/neck. The Moldcare was used in combination with an appropriate carbon fiber HR.

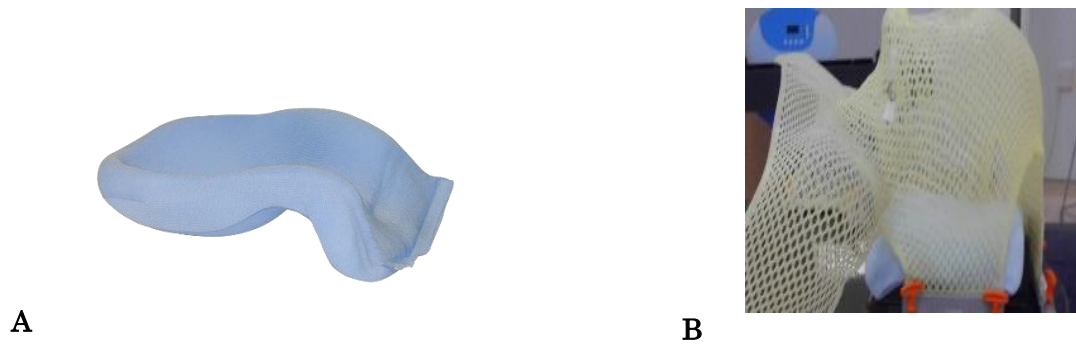


Fig 1: **A** shows stand alone Moldcare cushion and **B** shows Moldcare attached to standard headrest with thermoplastic immobilization mask

<Results>

The results of the audit indicated that there was no statistically significant difference in the systematic or random set-up errors for all 3 HR immobilization systems. This therefore suggests that all 3 HRs are likely to produce equivalent levels of set-up reproducibility and stability.

A questionnaire was completed by 28/29 (97%) of eligible radiographers (i.e. radiographers who had experience using all 3 HR immobilization systems).

The results from this questionnaire indicate that radiographers, at both pre-treatment and treatment delivery stage, are strongly in favor of using Moldcare as a HR immobilization option. The SHRMC combination ranks significantly higher than the other 2 HR options in terms of ability to produce stable immobilization, patient comfort and conformity to patient's posterior neck.

In conclusion; **Moldcare is considered as an important HR immobilization option for H&N patients. Although a SHR alone may be adequate for some patients, the addition of Moldcare cushion should be considered when extra patient comfort and/or conformity to posterior head/neck is required.** The cost, fabrication time and training implications of Moldcare are not considered prohibitive.

*NHS is an abbreviation of "National Health Service". The NHS site (hospital) is a part of publicly funded healthcare systems in the United Kingdom.