

# MULTIPAD PRODUCT-FAMILY THE “NEW STANDARD OF CARE”

Pearltec products represent the new “Standard of Care” when it comes to the placement, positioning and fixation of patients during MR and CT examinations, with regard to image quality, handling, hygiene and patient comfort.

## SWISS TECHNOLOGY INSIDE

Together with the ETH Zurich and other renowned institutes, an innovative and patented product technology has been developed consisting of soft and mobile polystyrene beads combined with inflatable air chambers, which fits the patient perfectly, thereby creating individual and gentle placement, positioning and fixation.

## INNOVATIVE SOLUTIONS

Pearltec offers its customers innovative solutions for placement, positioning and fixation in radiology and radiotherapy. This includes a wide range of standard products, tailor-made customer solutions for systems suppliers and technical solutions for research.



## MULTIPAD FAMILY OF PRODUCTS

The flexible and universally applicable MULTIPAD family of products enables optimum patient placement, positioning and fixation when it comes to examinations using head and extremity coils.



### MULTIPAD Standard

Thanks to its dimensions of 17x6 cm and the variable thickness of 2 to 5 cm, the MULTIPAD Standard is particularly suitable for situations where there are no specific restrictions.



### MULTIPAD Plus

Thanks to its dimensions of 17x11 cm and the variable thickness of 2 to 5 cm, the MULTIPAD Plus is particularly suitable to fill larger gaps.



### MULTIPAD Slim

Thanks to its dimensions of 17x9 cm and the variable thickness of 1 to 3 cm, the MULTIPAD Slim is particularly suitable for situations where space is limited.



### MULTIPAD cover

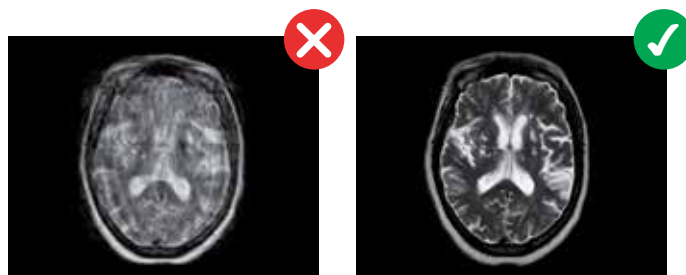
The covers for the MULTIPAD product family form an integral component for a hygienic and patientfriendly application.



At least four good reasons to consider Pearltec products as the new “Standard of Care” for the placement, positioning and the fixation of your patients for MRI and CT examinations.

## FEWER MOTION ARTEFACTS

Leads to improved image quality and therefore a reliable diagnosis.  
Leads to fewer repetitions and therefore saves time and costs.



## USER-FRIENDLY SYSTEM SOLUTION

Enables efficient, clear and straightforward handling, therefore reducing the large variety of different placement products.



## PERFECTLY HYGIENIC

It is easy to clean, provides reliable protection and therefore fosters the safety and wellbeing of the patient.



## HIGH LEVEL OF PATIENT COMFORT

The pressure-free, adaptive immobilisation increases patient comfort and therefore has a positive effect on the entire examination procedure.



## APPLICATION FIELD

The flexible MULTIPAD family, consisting of MULTIPAD Standard, MULTIPAD Plus, MULTIPAD Slim can be universally used either alone or in combination during all examinations with head and extremity coils.



# Study shows significantly improved MR image quality:

## A comparison of traditional positioning aids vs. Pearltec Multipad on uncooperative patients and patients with involuntary motion

Dr. Melanie Fukui et al., Neuroradiology, Allegheny General Hospital, Pittsburgh, December, 2013

### Background

Repetitions of MR examinations due to motion artifacts cost time and money. A study based on 192 exams conducted by Andre et al. [1] found that 59% of the measured sequences had visible motion artifacts causing sequence repetitions on almost every fifth MRI patient examination. Andre et al. conclude, "greater attention and resources should be directed toward providing practical solutions to this dilemma". Therefore, an optimized positioning system for the patients is crucial. In this study conducted at Allegheny General Hospital the application of Pearltec's Multipad was compared with traditional positioning aids in brain MR examinations.

### Objective

To assess the impact of Pearltec's Multipad in comparison to traditional positioning aids with regard to image quality when performing MRI examinations on uncooperative patients and patients with involuntary motion.

### Material and Methods

To analyze the potential elimination of motion artifacts, a user study was carried out at Allegheny General Hospital, Pittsburgh where brain MR exams were performed on uncooperative patients and patients with involuntary motion (n=22 subjects). First, exams were performed using traditional positioning aids. Next, exams were repeated using Pearltec's Multipad (Figure 1)

Exams were performed on either a Siemens Avanto or a Symphony MR system. Finally, Dr. Melanie Fukui, a specialist in neuroradiology and diagnostic radiology, rated the exams using a 5-tier scale designed to incorporate the impact of motion artifacts on diagnostic image quality. Ghosting artifacts, artifacts other than ghosting artifacts, sharpness of brain edge and image noise as well as the overall image quality were assessed.



Fig. 1: Pearltec's Multipad used in the study.



## Results

The study was conducted on 22 patients. Exams using traditional positioning aids resulted in images with moderate to severe artifacts where every fourth measurement was deemed non-diagnostic. On the other hand, exams using Pearltec's Multipad generated diagnostic quality images. Overall image quality increased from an average of 1.0 (moderate to severe artifacts) to an average of 3.0 (minimal image artifact). In 8 out of 22 patients, one of whom was an 83-year-old male patient, images obtained were deemed to be free of artifacts (Figure 2).

Overall, ghosting artifacts decreased in severity from 1.0 to 2.9. Artifacts other than ghosting artifacts decreased from 1.15 to 3.0; the sharpness of brain edge decreased from 1.05 to 3.2, and image noise was diminished from 1.0 to 3.1, where 0 corresponds to severe image artifacts and 4 to no image artifact (Figure 3).

## Conclusion

Motion artifacts are the most common cause of MR image degradation, particularly in the case of uncooperative patients and patients with involuntary motion. Exams using traditional positioning aids yielded images containing severe motion artifacts, which were deemed non-diagnostic. On the other hand, exams conducted using Pearltec's Multipad generated diagnostic-quality images, which were almost artifact-free. Pearltec's Multipad provides an opportunity to overcome motion artifacts, improve image quality and achieve a new standard of care for patients.

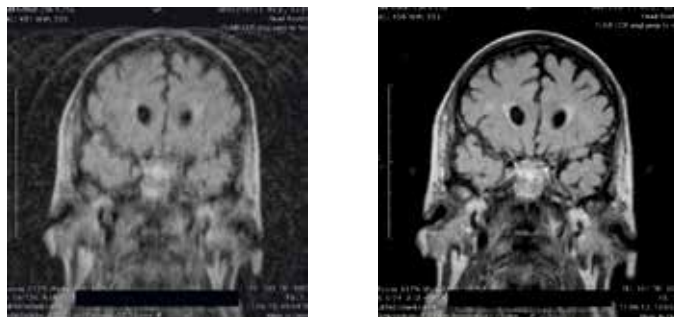


Fig. 2: Image quality comparison on a brain scan of an 83-year-old male patient. First exam used conventional foam (left side), second exam used Pearltec's Multipad (right side).

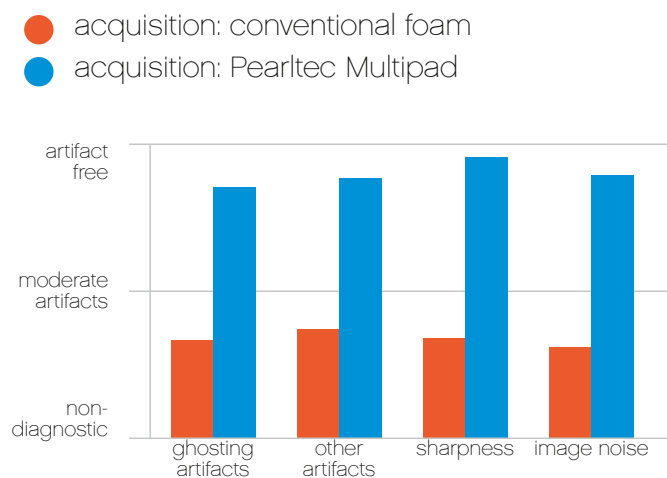


Fig. 3: Results showing near artifact-free images using Pearltec's Multipads.

1) Towards Quantifying the Prevalence, Severity, and Cost Associated With Patient Motion During Clinical MR Examinations. Andre, Jalal B. et al. Journal of the American College of Radiology, Volume 12, Issue 7, 689-695



# Get more revenue from your workflow

Today, imaging professionals are faced with reduced reimbursement rates, increased compliance requirements and added patient volume. To address these challenges, a survey of decision makers in diagnostic imaging by UBM Medica found that improving workflow efficiency in order to reduce reporting turnaround time was a key priority.<sup>1)</sup>

## The challenge

A study <sup>2)</sup> based on 192 exams conducted by Jalal B. Andre, MD, of the University of Washington and colleagues found that **59% of 1,238 sequences had visible motion artifacts** affecting almost every fifth MRI examination (see Fig. 1). Patient motion resulting in suboptimal image quality has a negative impact on radiologic interpretation, which means repeat scans have to be performed. So just how much do repeat scans cost? Jalal B. Andre and colleagues estimate the forgone revenue to be \$115,000 per scanner per year.<sup>2)</sup>

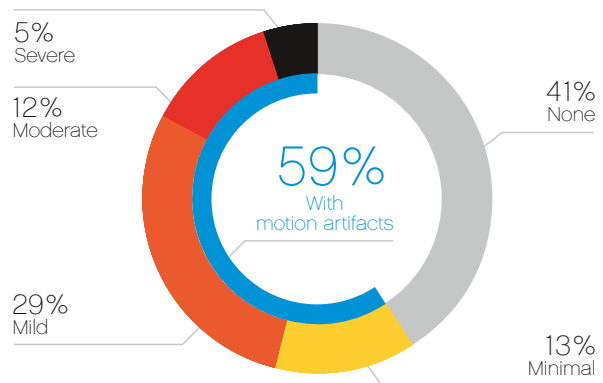
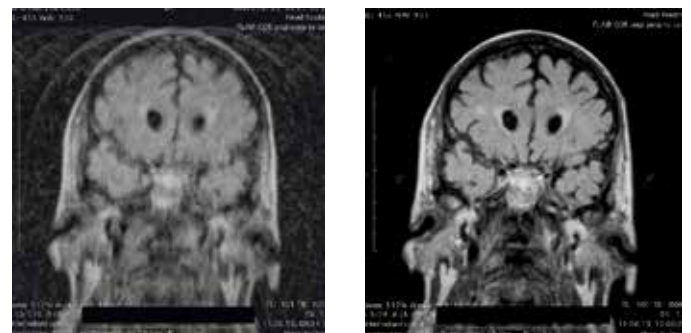


Fig. 1: Prevalence and distribution of motion artifacts.

## Our solution

Pearltec's technology is designed to ensure comfortable and effective immobilization of patients. A study conducted on 22 patients at Allegheny General Hospital confirmed that using Pearltec's technology resulted in near artifact-free images when compared with conventional foam. This was borne out in an article<sup>3)</sup> by Imaging Economics that reported imaging professionals at Intermountain Healthcare found Pearltec's ability to conform to each patient helped to **reduce motion artifacts by more than 80%**.



MR with conventional foam

MR with Pearltec MULTIPAD

Fig. 2: Image Quality comparison (83 year old patient).

## Your benefit

Imagine if this simple way of reducing motion artifacts translated to only **50% less retakes, representing a cost reduction of \$ 57,500** (see Fig. 3). Pearltec's ease of use, its universal applicability and effective immobilization accelerates patient set-up time, improves image quality and reduces costs from retakes which has a positive effect on the overall workflow efficiency.

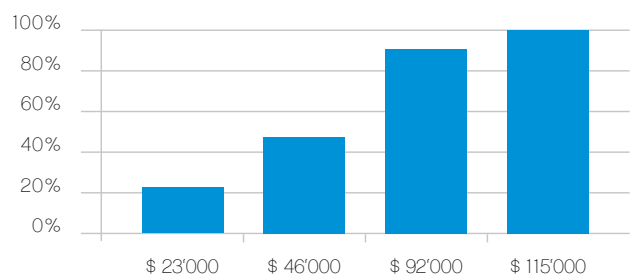


Fig. 3: Cost savings per scanner per year from motion reduction.

1) "Facing the Challenges Ahead in Diagnostic Imaging." Facing the Challenges Ahead in Diagnostic Imaging. M\*Modal, 27 Sept. 2013.

2) Andre, Jalal B. et. al., "Towards Quantifying the Prevalence, Severity, And Cost Associated With Patient Motion During Clinical MR Examinations," Journal of the American College of Radiology 12.7 (2015): 689-95. Web. 6 July 2015.

3) Markland, James. "Less Repeat Exams: It's All in the Positioning -Imaging Economics." Imaging Economics. 17 Oct. 2014.

