

INTRODUCTION

GammaTile is a permanent Brachytherapy implant for the brain (Figure 1). Tiles consist of 4 Cs-131 seeds spaced equally apart from each other in a square shape. Tiles must be ordered and received before the surgery to place them at the time of surgery. This preliminary study looked at how often we ordered enough tiles.



METHODS

Data was compiled retrospectively to analyze the number of tiles ordered vs placed. Another analysis was done on the Brachytherapy plan to analyze if the number of tiles placed was sufficient to cover 95% of the target volume with 30 Gy. We are currently working on a publication to share our process for estimating the number of GammaTiles that need to be ordered. The dose distribution was analyzed to see if any patients did not have 95% of their target covered by the 30 Gy isodose line. Patients that did not meet this coverage were analyzed to see if all ordered GammaTiles were placed or not.

RESULTS

14 patients had their data retrospectively analyzed. 6 of the 14 patients had no leftover tiles, meaning all ordered tiles were placed within the patient (Table 1). 2 of the 6 patients with no leftover tiles did not have 95% of their target volume covered by the 30 Gy isodose line (Table 2). Overall, 11 of the 14 patients achieved a V30 of 95% or greater (Table 3).

Had All GammaTiles Ordered Implanted	
Yes	6 (43%)
No	8 (57%)

Table 1: A summary of if all ordered GammaTiles were placed during surgery. 6 of 14 did have all GammaTiles used and 8 of the 14 did not.

Had V30≥95%	
Yes	4 (67%)
No	2 (33%)

Table 2: A summary of if 95% of the target volume was covered by the 30 Gy isodose line for the 6 patients that did have all GammaTiles implanted. 4 patients achieved this level of coverage and 2 did not.

Had V30≥95%	
Yes	10 (72%)
No	4 (28%)

Table 3: A summary of if 95% of the target volume was covered by the 30 Gy isodose line. 10 patients achieved this level of coverage and 4 did not.

CONCLUSIONS

8 of the 14 patients had at least one GammaTile leftover. The challenge in ordering GammaTiles is your estimate needs to ensure there are enough tiles but not too many. If you do not have enough tiles you may not achieve your desired dosimetric goal. However, if you order too many tiles you are wasting the hospital and the supplier's resources. We hope to publish a technique for how you can personalize the estimate of the number of tiles needed for each patient.

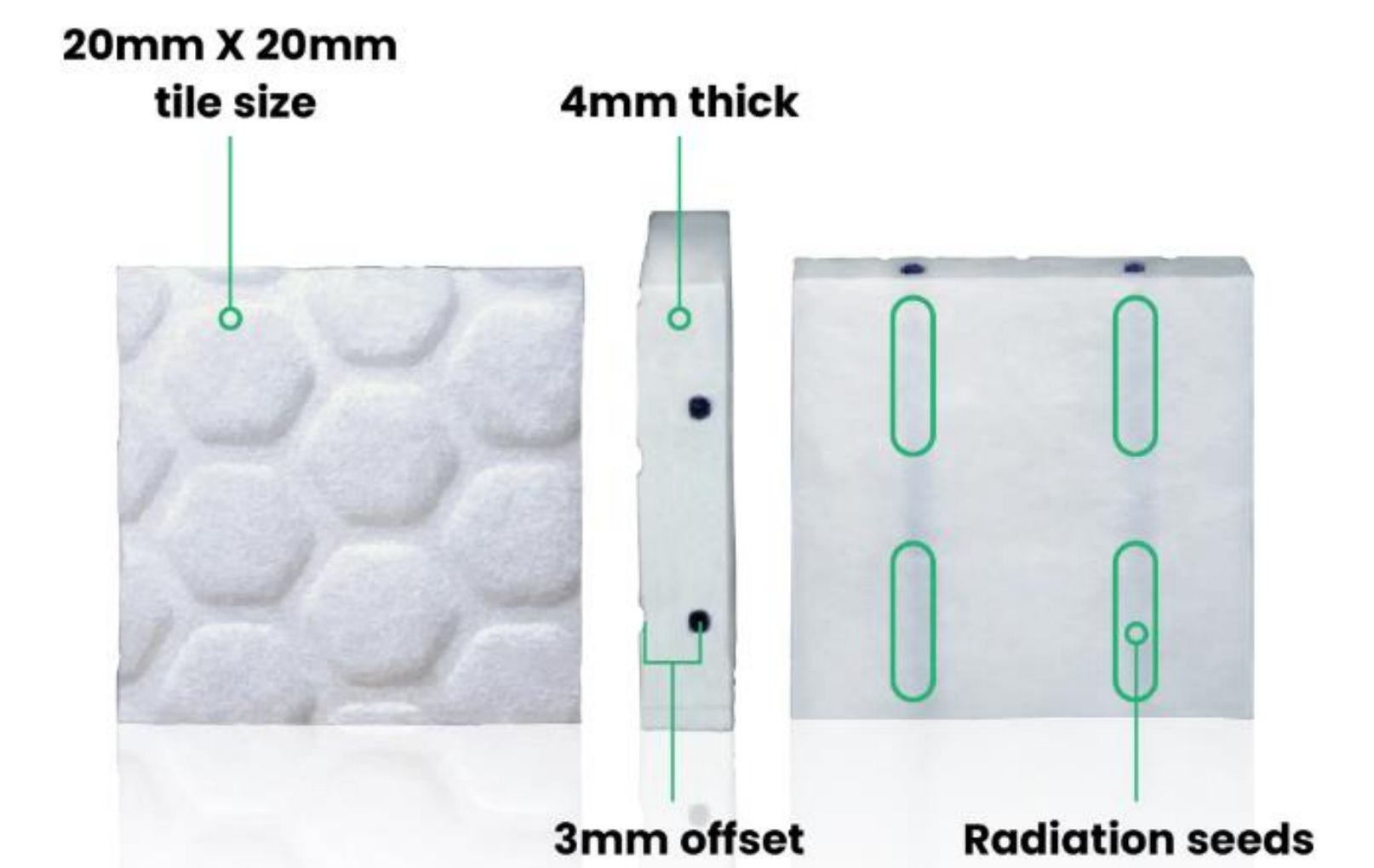


Figure 1: A GammaTile source is shown. The tile is collagen based and seeds are spaced as shown.
<https://gammatile.com/>

FUTURE WORK

There are a couple current issues with starting or running a GammaTile program. There is not a universal approach for estimating the number of tiles that need to be ordered. We are working on a publication to address this currently. GammaTile is also working on a lookup table based off the tumor's maximum dimension. Secondly, there is no agreed upon technique for drawing post operative target volumes, which means there is no agreed upon dosimetric goals for the brachytherapy plan. There is currently a multi-institutional study underway to attempt to create an accepted technique.

CONTACT INFORMATION

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