

Registration of Pre- and Post-resection Ultrasound Volumes with Non-corresponding Regions in Neurosurgery

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1 Supplementary Material

To further demonstrate the effectiveness of our registration framework and our outlier detection algorithm, pre- and post-registration alignments of images of the remaining 11 patients are shown in Figs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11. The outlier detection algorithm identifies and locates outliers accurately, and therefore the alignment after NSR (d) is significantly improved compared with RESOUND (c). Parts (e) and (f) show the “Effective Region” for both directions, and Parts (g) and (h) are the overlay of the contour of “Effective Region” on the corresponding frame of the volume. It is clear that low SNR and non-corresponding regions are not in the “Effective Region”.

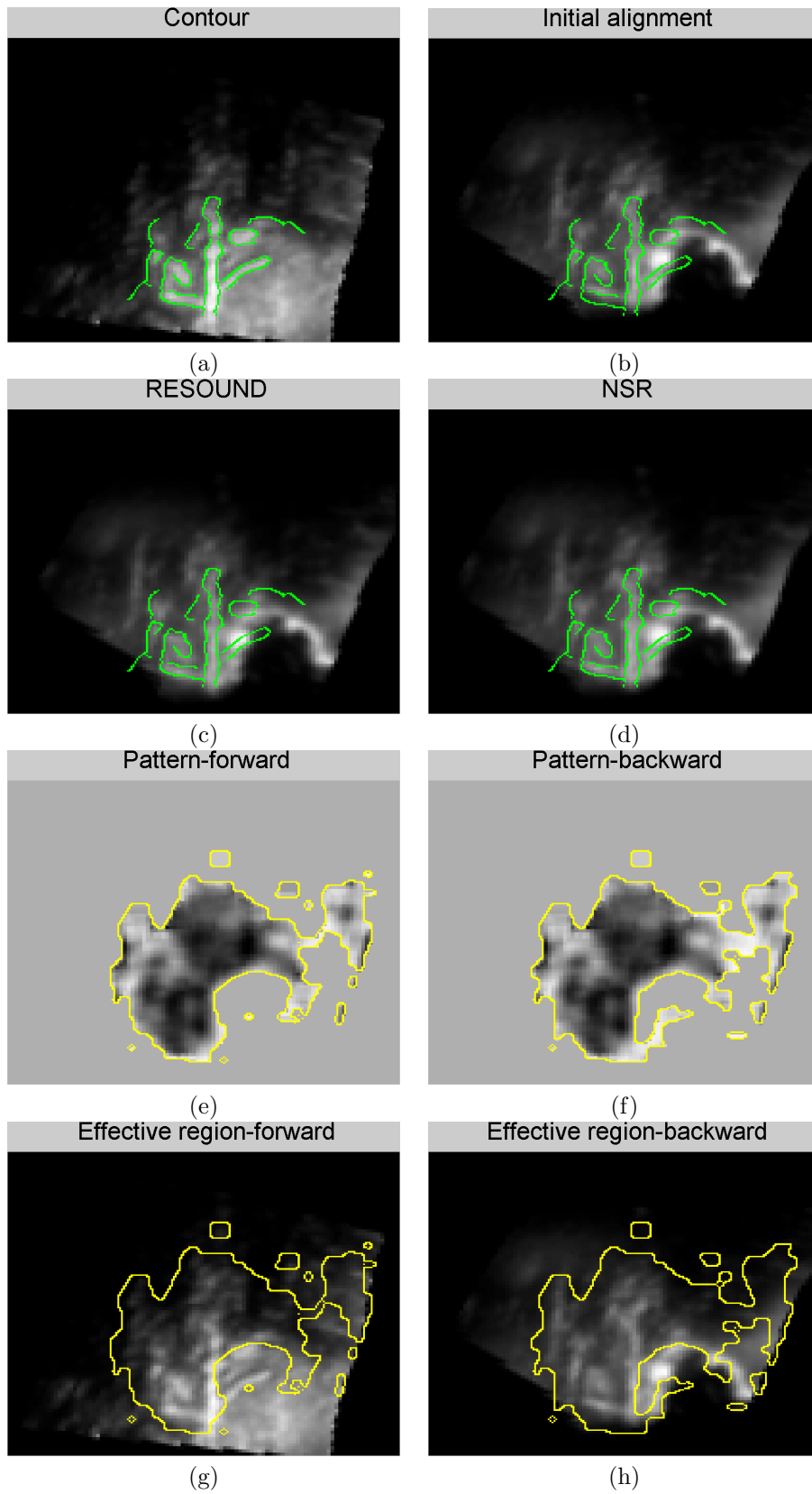


Figure 1: Registration results of Patient 1.

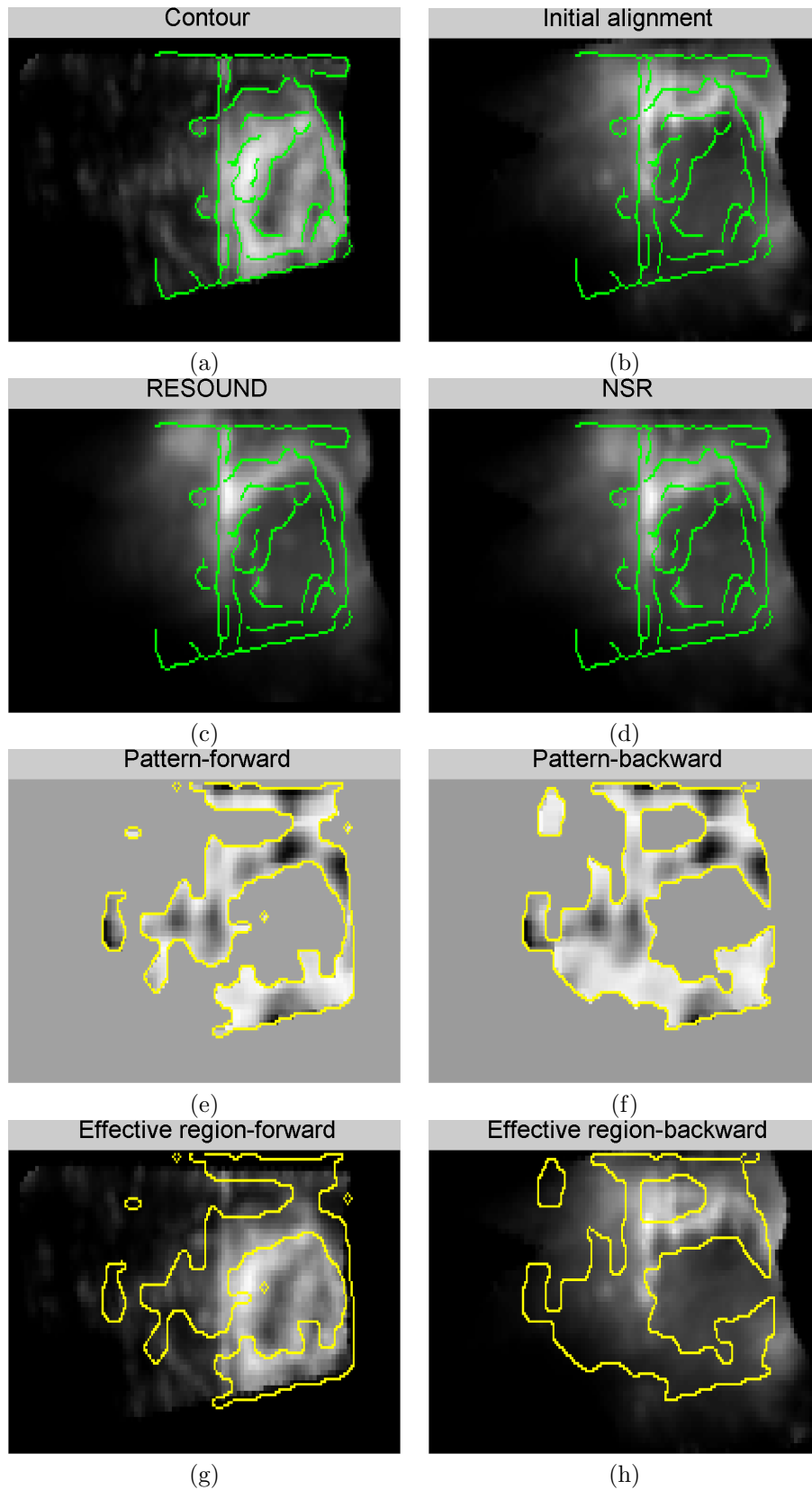


Figure 2: Registration results of Patient 3.

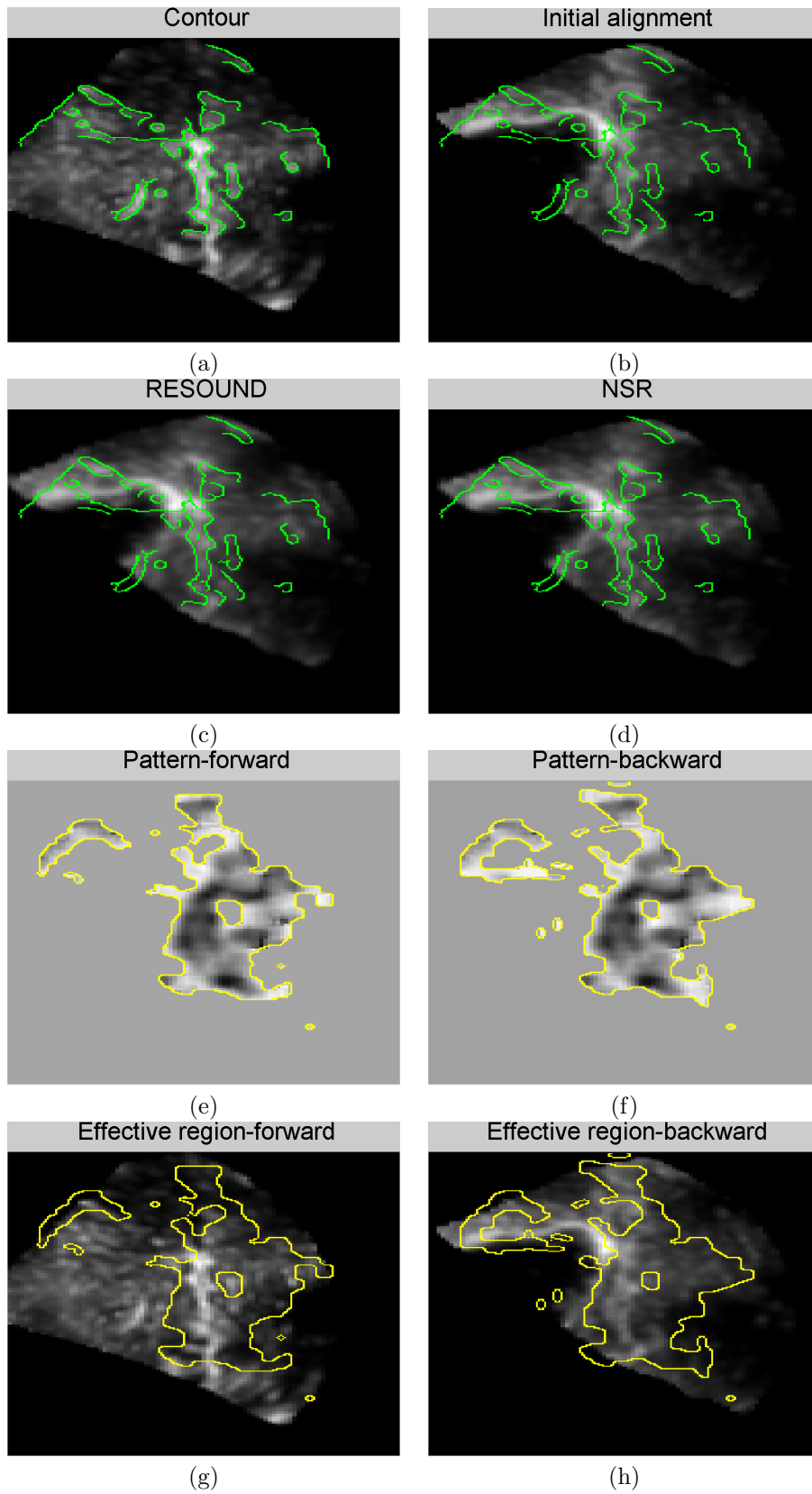


Figure 3: Registration results of Patient 5.

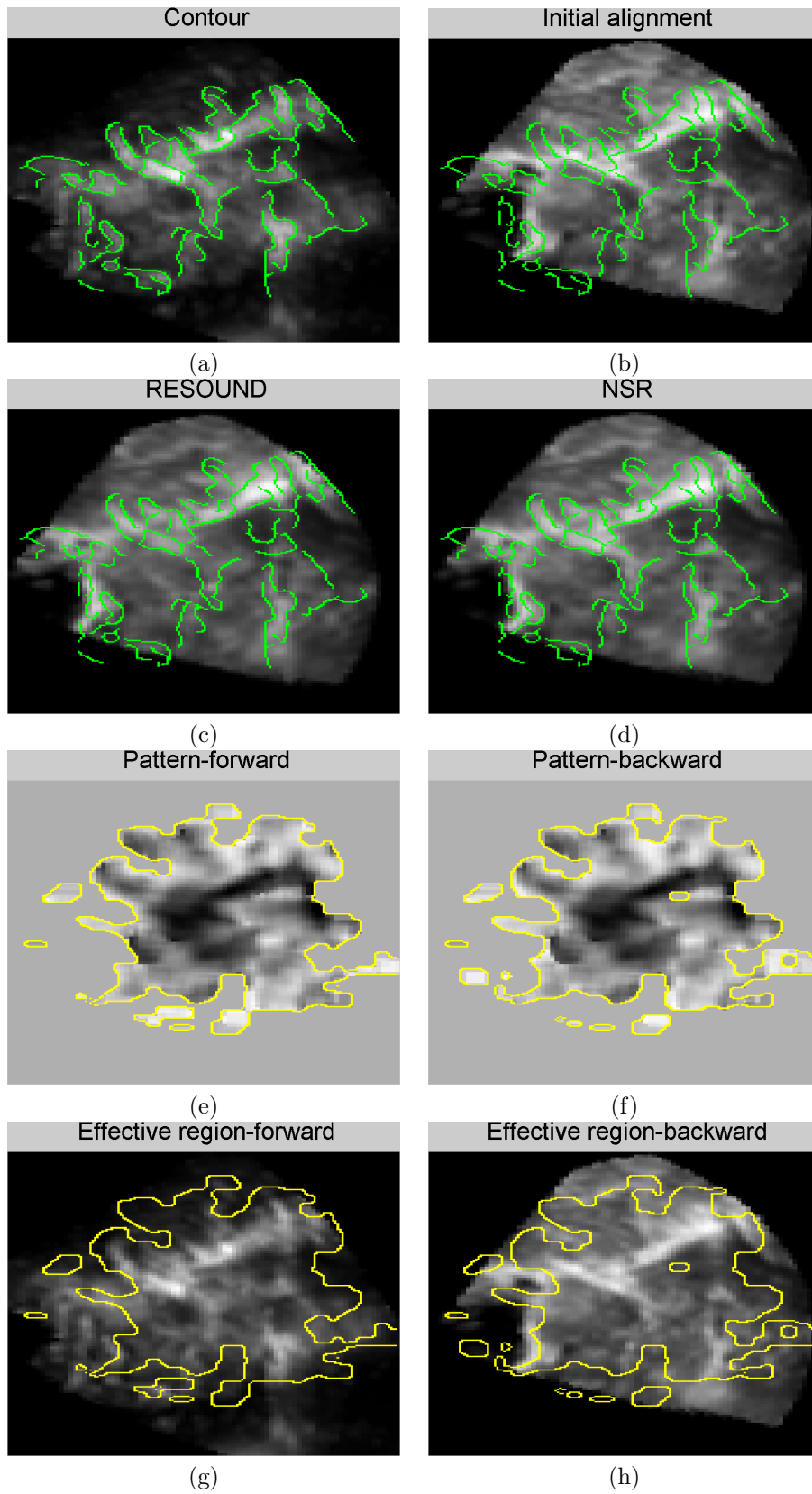


Figure 4: Registration results of Patient 6.

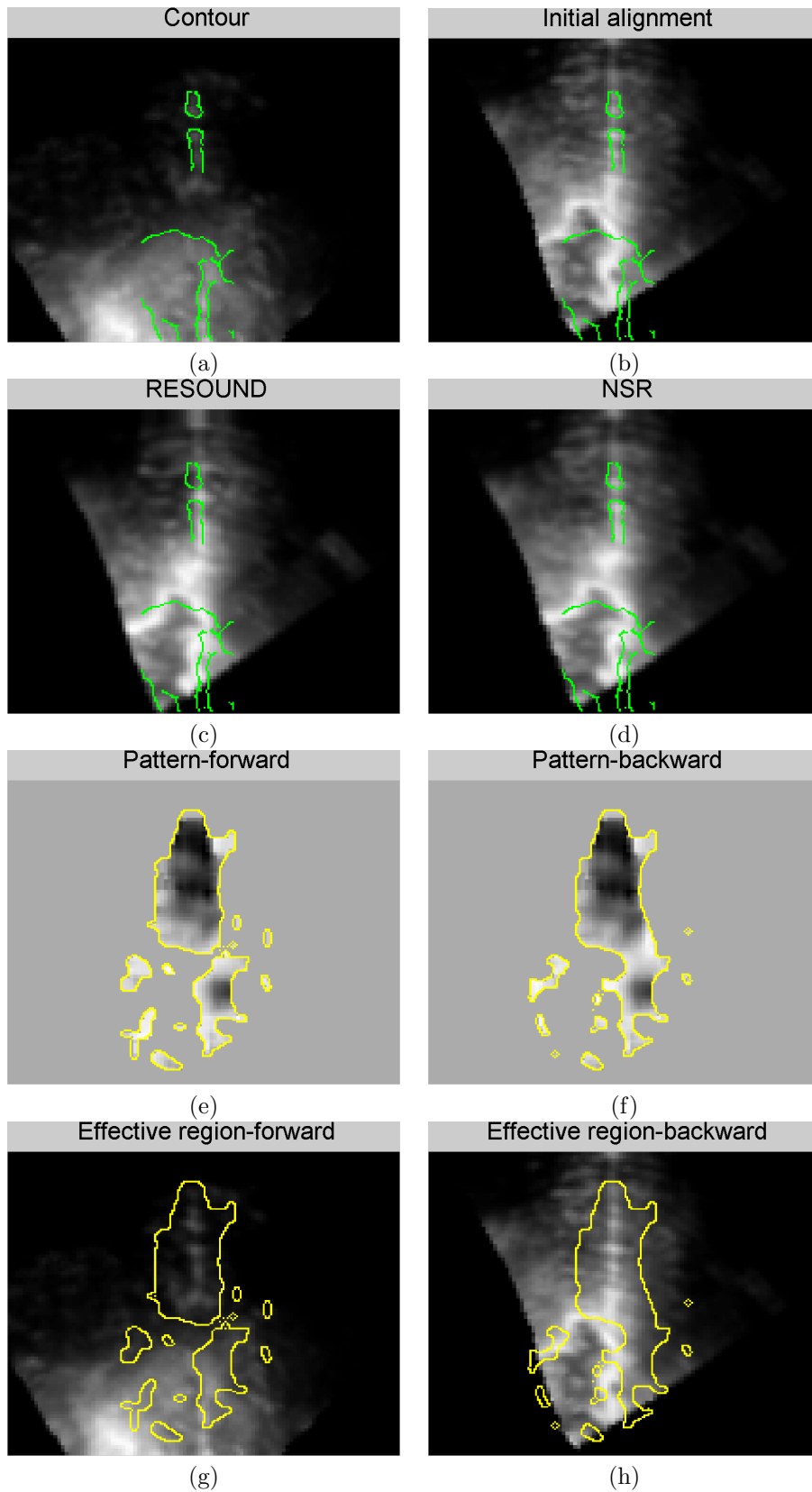


Figure 5: Registration results of Patient 7.

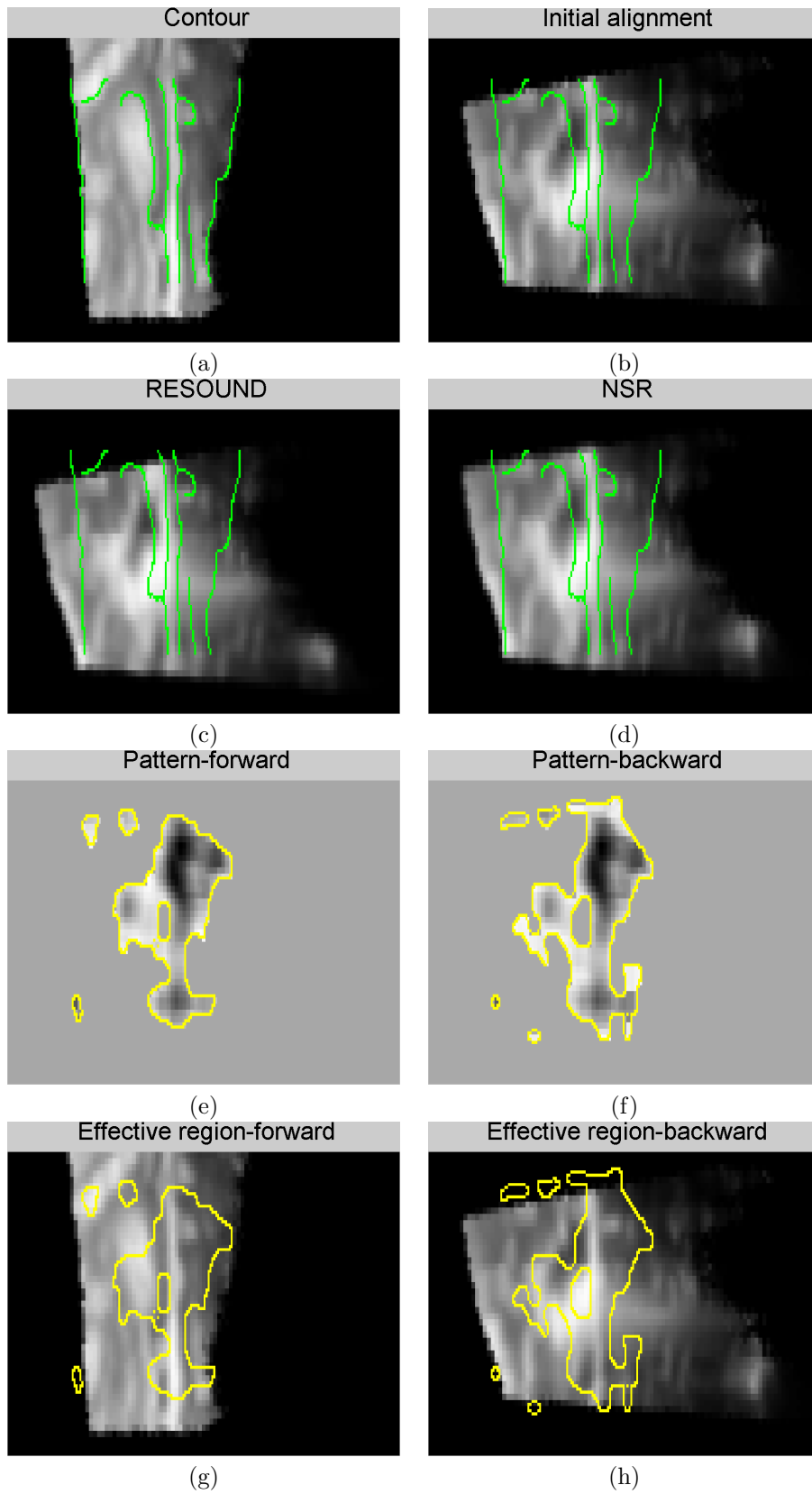


Figure 6: Registration results of Patient 8.

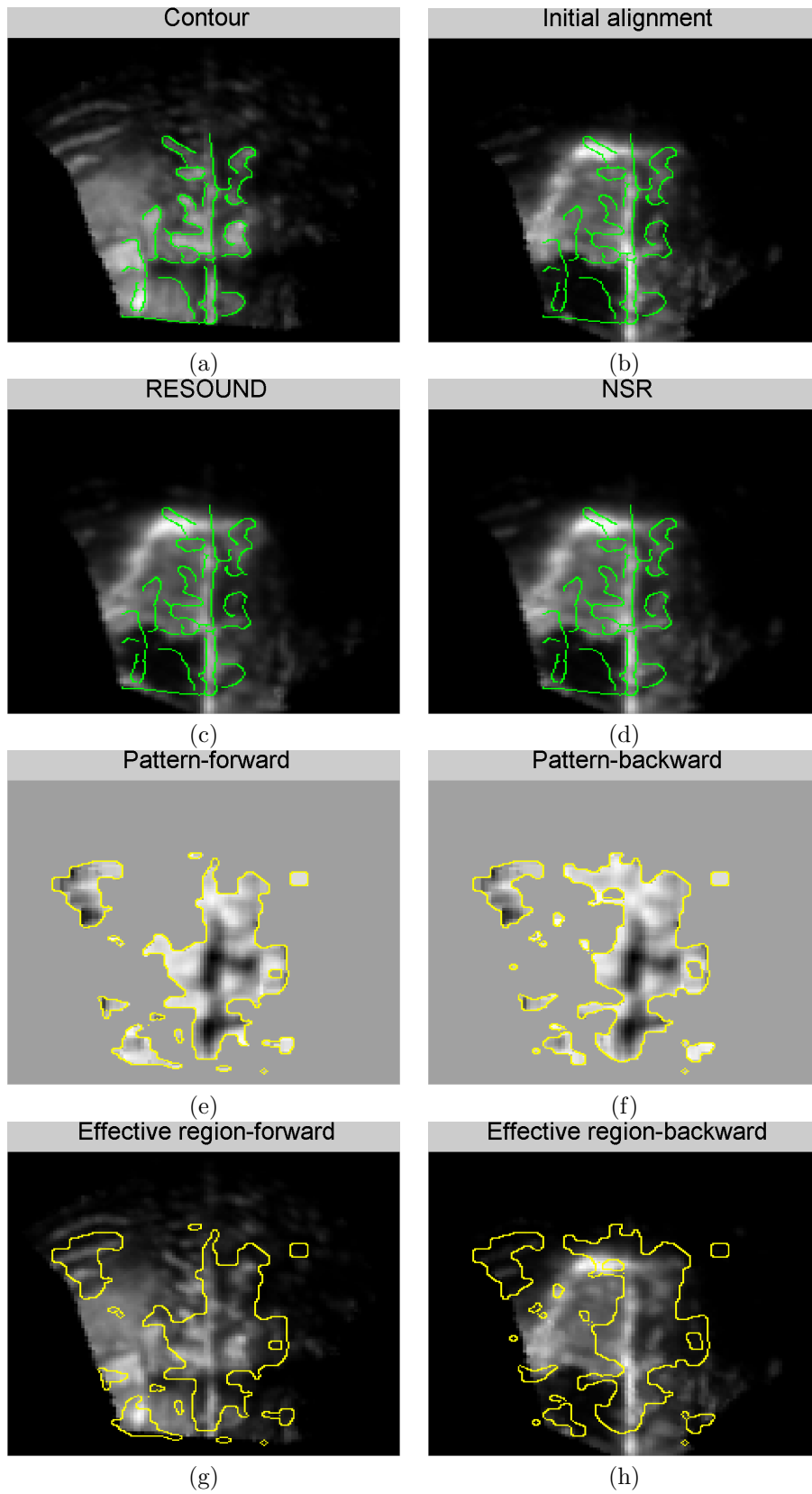


Figure 7: Registration results of Patient 9.

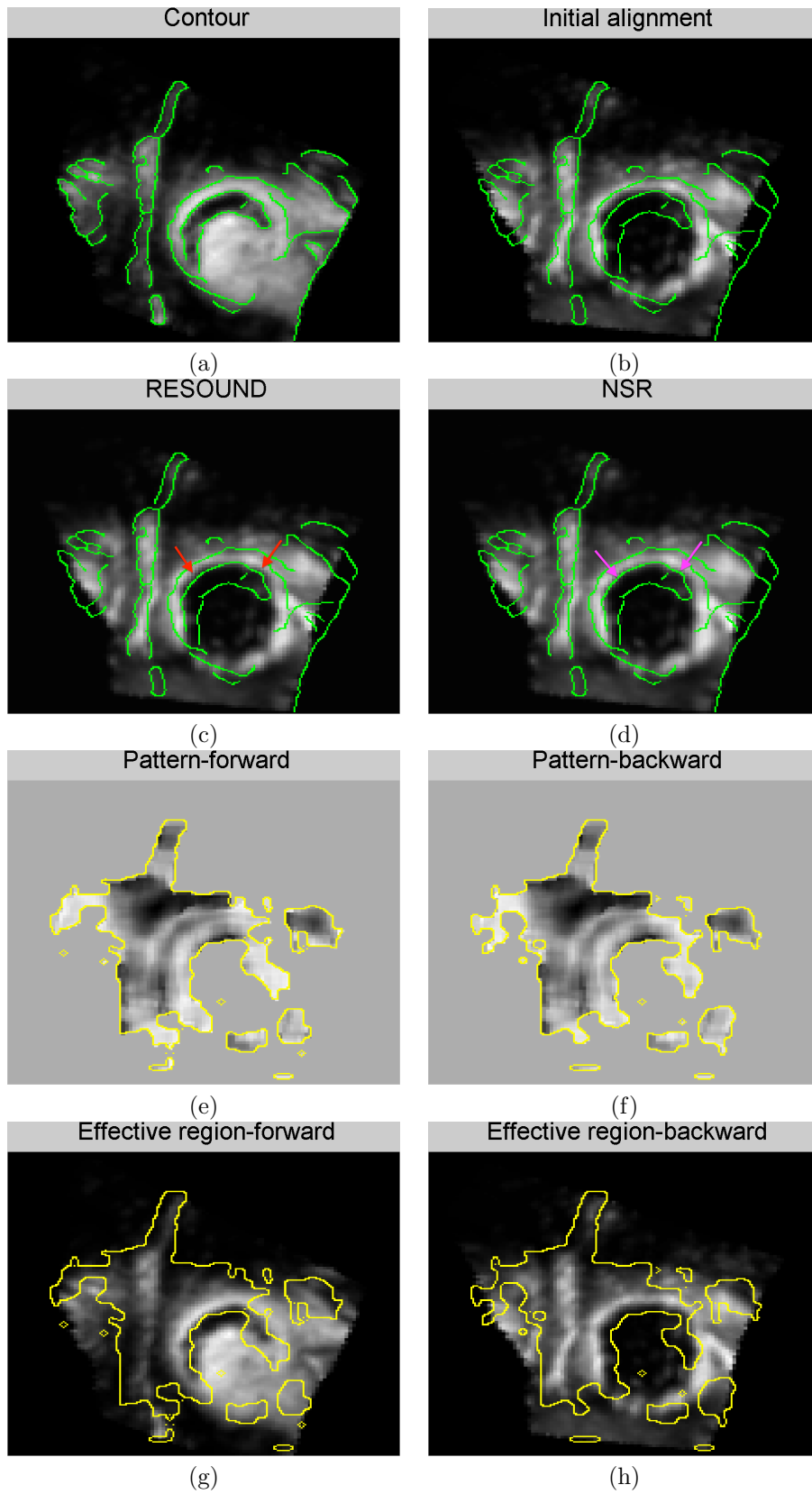


Figure 8: Registration results of Patient 10.

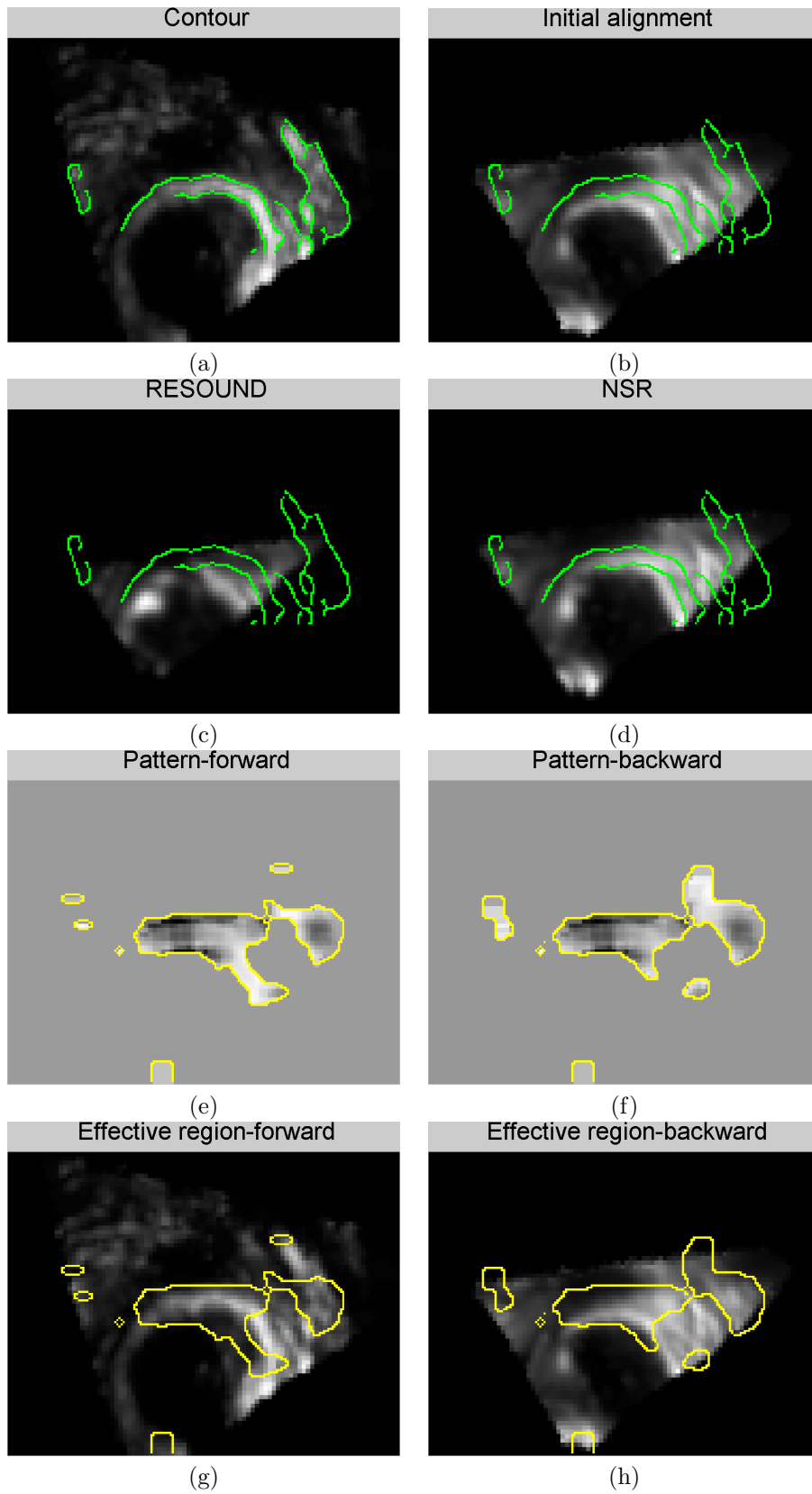


Figure 9: Registration results of Patient 11.

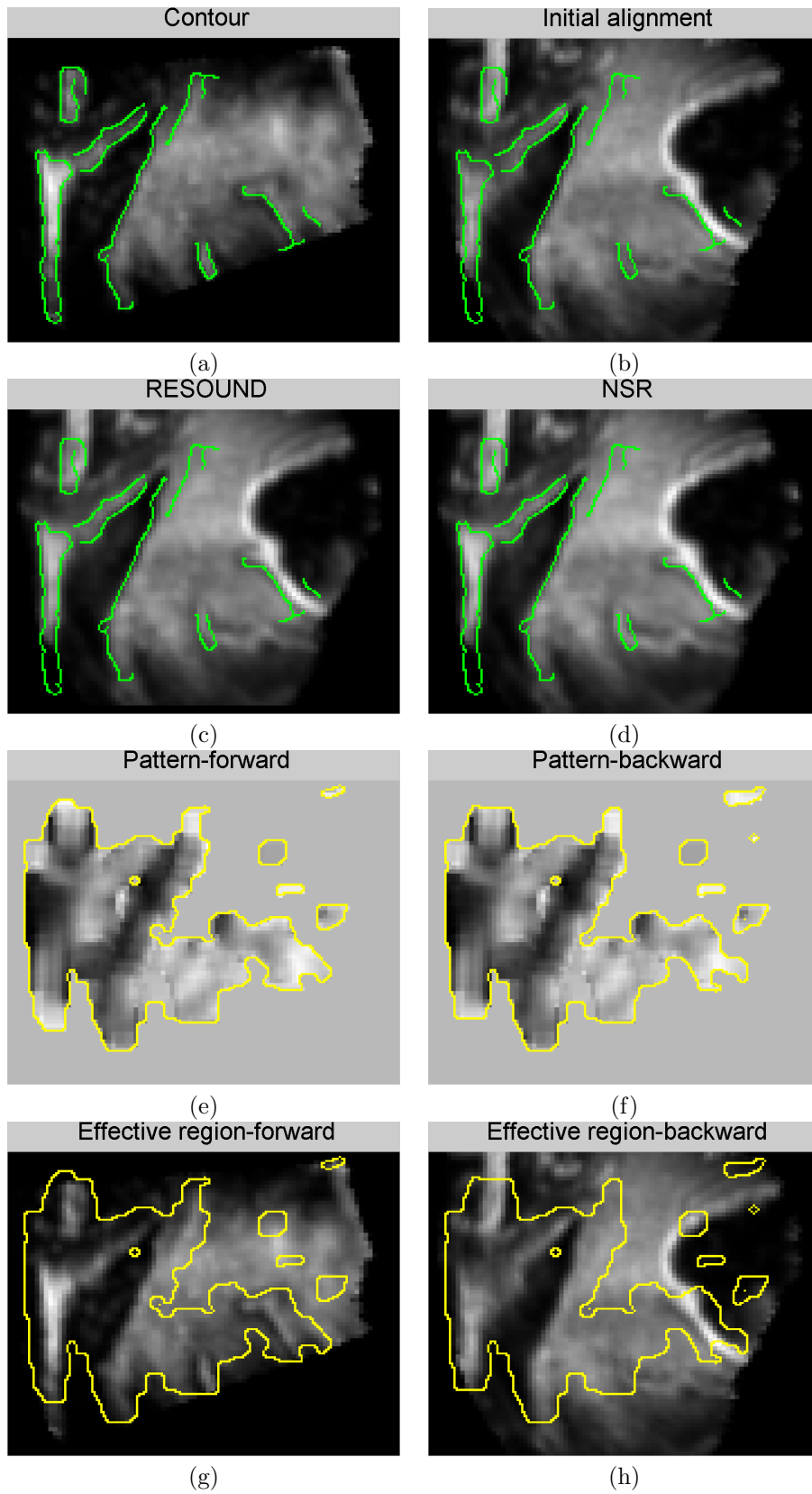


Figure 10: Registration results of Patient 12.

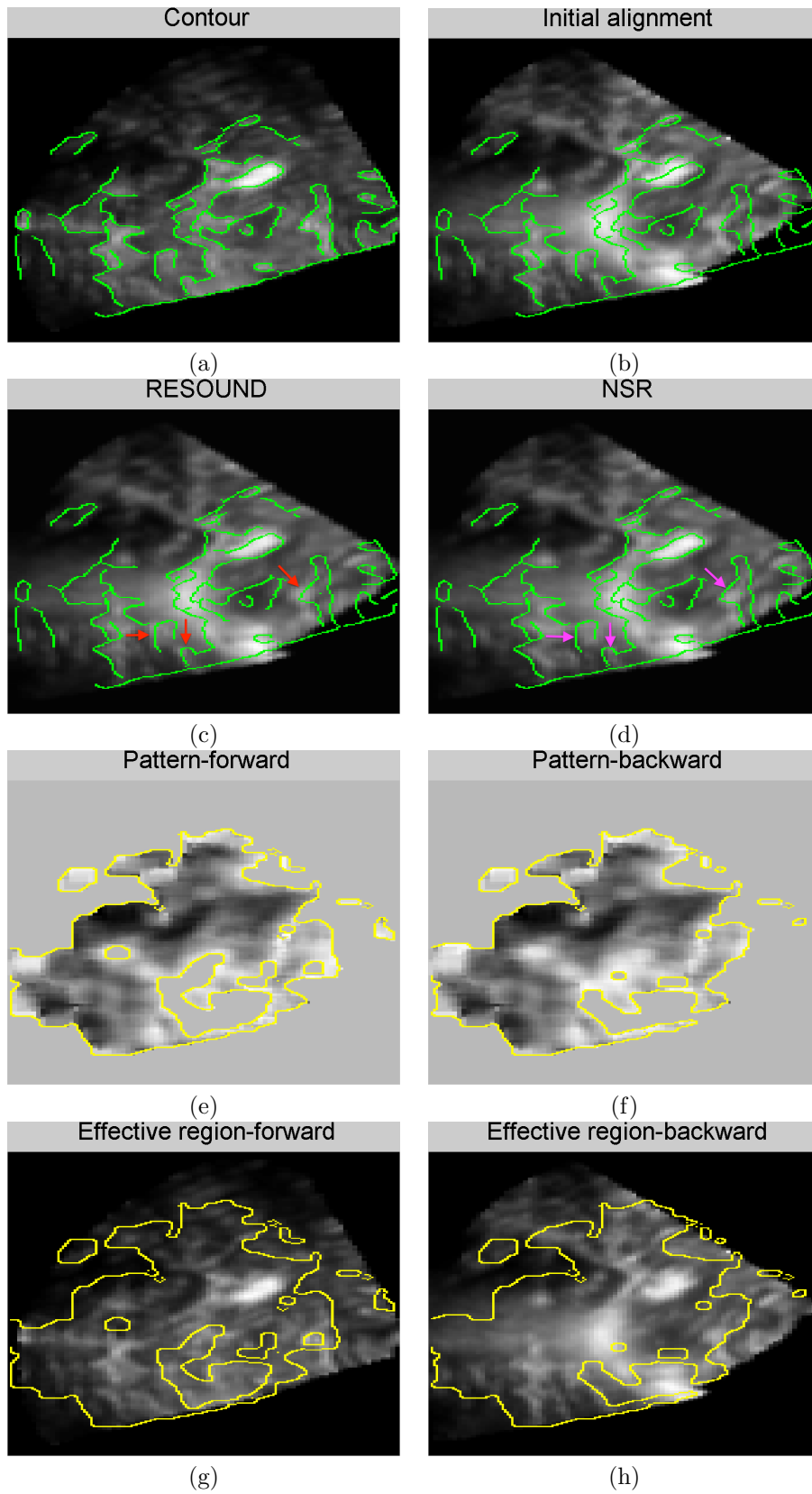


Figure 11: Registration results of Patient 13.