**Optimization of parathyroid 11C-choline PET protocol for localization of parathyroid adenomas in patients with primary hyperparathyroidism**

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**Supplementary material 4: results optimal uptake time of tracer**

The ratios adenoma/muscle and adenoma/T1 became constant from the uptake time of 20-30 min p.i. onwards (Fig supplementary material 4). The adenoma/aorta ratio continued to increase over time (Fig supplementary material 4), from 1.70 to 5.76, as activity was cleared from the bloodpool (Table supplementary material4). In the uptake time of 0-10 versus 10-20 min p.i. the adenoma/aorta ratio increased from 1.70 to 3.75 (p=0.008) and the adenoma/muscle ratio decreased from 3.59 to 2.67 (p=0.008) (Table supplementary material 4). In the uptake time of 10-20 versus 20-30 min there was only a significant difference in adenoma/aorta ratio (p=0.008) with an increase from 3.75 to 5.10, although the adenoma/muscle (decrease from 2.67 to 2.52) ratio is just slightly beyond the level of significance (p=0.021). From the uptake time of 20-30 min p.i. onwards, there were no significant differences with upcoming uptake times for any ratio and p-values were higher compared to previous uptake times (p>0.043).

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| **Table supplementary material 4** Descriptive statistics of the adenoma/aorta, adenoma/muscle and adenoma/T1 ratios for the different uptake times in n=9 patients. |
|  |  | **Uptake time of tracer (min)** |
|  | **00-10** | **10-20** | **20-30** | **30-40** | **40-50** | **50-60** |
|  | **Adenoma/aorta** |
| **Median** | 1.70 | 3.75 | 5.10 | 4.49 | 6.02 | 5.76 |
| **SD** | .76 | 2.13 | 2.68 | 3.71 | 49.02 | 2.87 |
| **IQ** | 1.07 | 2.76 | 3.25 | 3.28 | 4.70 | 4.87 |
|  | **Adenoma/muscle** |
| **Median** | 3.59 | 2.67 | 2.52 | 2.35 | 2.84 | 2.62 |
| **SD** | 3.38 | 2.61 | 2.26 | 2.29 | 1.99 | 1.14 |
| **IQ** | 4.19 | 2.93 | 2.65 | 2.38 | 2.46 | 2.13 |
|  | **Adenoma/T1** |
| **Median** | 2.30 | 1.96 | 2.09 | 2.07 | 2.55 | 1.80 |
| **SD** | 1.42 | 1.35 | 1.28 | 1.34 | 1.59 | .90 |
| **IQ** | 1.67 | 1.60 | 1.77 | 1.67 | 1.72 | 1.78 |

*T1 first* thoracic vertebra, *SD* standard deviation, *IQ* interquartile range.

Only 7 and 5 patients were scanned until 50 and 60 minutes postinjection, respectively.

**Fig** **supplementary material 4.** Scatter plot of parathyroid adenoma to background contrast in n=9 patients

Scatter plots with median values of **a**\*\* Adenoma/aorta ratio. **b** Adenoma/muscle ratio. **c** Adenoma/thoracic vertebra T1 ratio. *T1* first thoracic vertebra, *Uptake time of tracer* time (in min) between injection of 11C-choline and scanning procedure, *\**significant difference (p<0.01), *\*\**one outlier in adenoma/aorta ratio removed at timeframe of 40-50 min postinjection, as the figure was otherwise not readable.

Only 7 and 5 patients were scanned until 50 min and 60 min postinjection, respectively.