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Abstract Title: How Good Are Surgeons At Predicting Response To Chemotherapy And How Did That Affect Their Decision Making On Surgery? EURAMOS-1, European Osteosarcoma Intergroup Patients

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Background:
The EURAMOS-1 trial registered 2,260 patients from 17 countries between 2005 and 2011 of whom 1,334 joined one of two postoperative randomisations. Surgery was at the discretion of the local team and followed neoadjuvant chemotherapy.

Questions / Purposes:
The aim of this study was to assess how good surgeons were at estimating the response of the tumour to chemotherapy and to assess how this effected surgical decision-making.

Patients and methods: At the time of surgery, the surgeons in European Osteosarcoma Intergroup (EOI) were asked to assess how good the response to pre-operative chemotherapy had been. Options available were either: Good Response, Unchanged or Progressive Disease. These surgeon responses were then compared with the results reported by the pathologists. The pathologists reported the % necrosis as either being good (<10% viable tumour) or poor (≥10% viable tumour). Patients were grouped here as good response or not (i.e. poor response or disease progression)

Results:
Surgeon's opinion was completed for 363 out of 455 eligible EOI patients, and histological response was available for 361/363 patients. In those 361 cases, 205 patients were perceived by the surgeon to have had a good response, 129 had no change and 27 disease progression. The pathologists identified that 205 patients had a good response and 156 a poor response (Table 1). The pathologist agreed with the surgeon's estimate of "good response" in 162/205(79%) cases, and of "not good response" in 113/156(72%). Of those, 129 patients thought to have no change by the surgeons, 94 (74%) did in fact have a poor response. Conversely, 8 (4%) of the 205 patients with good necrosis were thought by the surgeons to have progressed.

Of the 156 patients without perceived good response at surgery, 51 had an amputation or rotationplasty (32%) compared to 13/205 with a perceived good response (6%). Local recurrence will be reported but was similar in all groups.

Conclusions:
EOI surgeons are reasonably accurate in being able to tell clinically the response to chemotherapy. They adjust the type of surgery according to the perceived response with a much higher rate of amputation in those with progressive disease or unchanged disease. This has resulted in acceptable local control rates in all groups. More sophisticated methods of determining response to chemotherapy could tailor surgical decisions even more clearly in the future.

Table 1: Surgeon's vs pathologist's score of the response

	Pathologist's score			
Surgeon's score	**Good**	**Poor**	**Total**	*Missing*
Good Response	162	43	**205**	*1*
Unchanged	35	94	**129**	*1*
Disease progression	8	19	**27**	*0*
Total	**205**	**156**	**361**	*n/a*
Missing	*29*	*46*	*n/a*	*17*