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Hemodynamic collapse in prone position due to thoracic malformation

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Pectus excavatum is the most common congenital chest wall abnormality. Placements of breast implants to fill the *pectus excavatum* deformity have been proposed to improve cosmetic chest wall appearance (Fig. 1a). Although *pectus* deformities are often asymptomatic,

placing these patients in a prone position may increase cardiac compression by the sternum. Here, we observed a life-threatening arterial hypotension refractory to hemodynamic treatment (rapid fluid loading plus vasopressor) when placing a patient in the prone position. The hemodynamic collapse was immediately and totally reversible in the supine position. A thoracic CT-scan subsequently revealed a severe *pectus excavatum* with compression of the right atrium (Fig. 1b). In the prone position, we assumed that the breast implants substantially enhanced the compression by the *pectus* deformity on the right heart chambers and were responsible for acute circulatory failure by obstructive shock. This hypothesis was confirmed by the reversibility of the arterial hypotension in the supine position. The prone position is now standard care in severe ARDS patients and its safety is no longer questioned. However, we observed that the prone position may also lead to a life-threatening hemodynamic collapse. The presence of thoracic malformation and/or breast implants should alert physicians before placing the patient in a prone position.

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Fig. 1 **a** The thorax of a 52-year-old woman with a medical history of bilateral breast cancer treated by mastectomy and reconstruction with breast implants. The *pectus excavatum* was not clinically diagnosed due to the effectiveness of the cosmetic surgery. **b** Thoracic contrast-enhanced CT-scan performed in supine position showing a right atrial compression by a severe *pectus excavatum*