

Ovarian Transplantation - The Erlangen Perspective



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Fortpflanzungszentrum
Franken

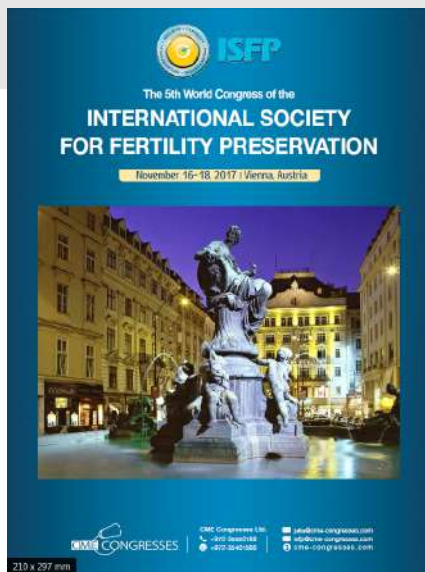


Universitäts-
Endometriosezentrum
Franken

Matthias W. Beckmann
Ralf Dittrich



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Session 7: Reimplantation of ovarian tissue Chairs:

Jehoshua Dor, Israel;
Tommaso Falcone, USA

17:30 - 18:40

Video presentation: Transplantation of
ovarian tissue techniques - Different
group presentations.

Jacques Donnez, Belgium;
Sherman Silber, USA;
Dror Meirou, Israel;
Mikkel Rosendahl, Denmark;
Matthias Beckmann, Germany.

Presentation of world registry results:
Cesar Diaz, Spain

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ISFP

The 5th World Congress of the
**INTERNATIONAL SOCIETY FOR
FERTILITY PRESERVATION**
November 16-18, 2017 | Vienna, Austria

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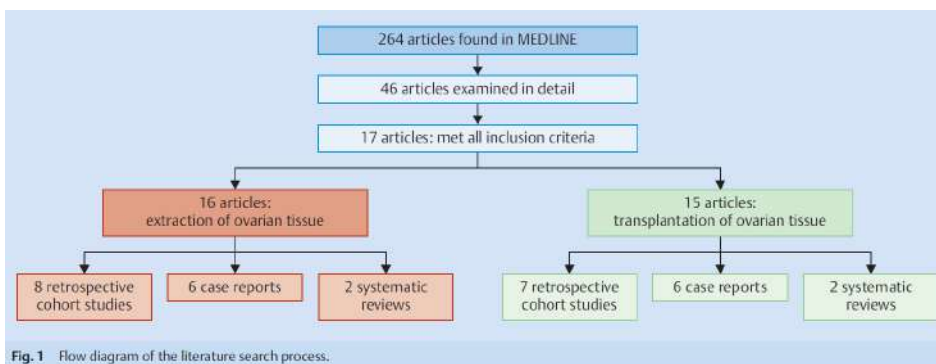
Reimplantation of ovarian tissue – the Erlangen experience!

Disclosure Information: Nothing to declare!

www.isfp2017.cme-congresses.com

Surgical Aspects of Ovarian Tissue Removal and Ovarian Tissue Transplantation for Fertility Preservation

Beckmann MW et al. Surgical Aspects of... Geburtsh Frauenheilk 2016; 76: 1057–1064



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Surgical Aspects of Ovarian Tissue Removal and Ovarian Tissue Transplantation for Fertility Preservation

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Investigated surgical criterion	Options	Articles
Surgical approach for ovarian tissue transplantation	Laparotomy	[12, 24]
	Laparoscopy	[9, 10, 13, 16, 17, 19, 22, 25]
	Laparoscopy + laparotomy	[18, 21]
Graft site	Peritoneal pocket in the pelvic wall near the ovary	[9, 10, 12, 13, 15–18, 21, 22, 25]
	Ipsilateral ovary	[9, 15, 18]
	Contralateral ovary	[12, 13]
	Ipsilateral or contralateral ovary	[10, 17, 21, 22, 25]
	Ipsilateral and contralateral ovary at the same time	[19, 24]
Instruments used during transplantation	Heterotopic transplantation into abdominal subcutaneous fat tissue	[15, 17, 21, 25]
	Scissors or scalpel without coagulation	[9]
Surgical treatment of the transplant site	Biopsy forceps	[22]
	No closure of the peritoneum after transplantation	[9]
Simultaneous surgical procedures performed during transplantation	Sutures used to close the peritoneum after transplantation	[10, 12, 18, 19, 22]
	Fibrin glue used to close the peritoneum after transplantation	[10, 12]
	Fixation of the transplant using fibrin glue	[10, 12]
	No coagulation of the peritoneum	[9]
	Coagulation of the peritoneum	keine Daten
Simultaneous surgical procedures performed during transplantation	Chromotubation	[9]
	Placement of drains	[9]

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Operative techniques and complications of extraction and transplantation of ovarian tissue: the Erlangen experience

Beckmann MW et al. Operative techniques and ... Arch Gynecol Obstet (2017) 295:1033–1039

The following schedule is used for ovarian tissue transplantation:

- The patient is placed in the lithotomy position, followed by vaginal disinfection, hooking of the portio, testing of probe length, and hysteroscopy. Any pathological tissue that may be present is removed if feasible. Insertion of a catheter, connection of the catheter with a syringe with sterile saline.
- Abdominal disinfection, sterile draping, subumbilical stab incision. Insertion of the Veress needle. If the safety test is unremarkable, insufflation of CO₂ gas until a hyperresonant percussion sound is present in all four quadrants. Insertion of the trocar and optics under visual guidance.
- 360° inspection, with imaging of the upper and lower abdominal organs. Documentation of any pathology.
- After a caudal stab incision, correct positioning of three 5-mm trocars in the lower abdomen.
- Imaging of the internal genitals, with identification of the uterus, fallopian tubes bilaterally, ovaries bilaterally, lateral pelvic vessels, and the course of the ureter. Documentation of any sites of probable pathology and removal of any pathological tissue if present and feasible.
- Testing the patency of the fallopian tubes.

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The following schedule is used for ovarian tissue transplantation:

- Dissection of a peritoneal pouch on the side of the previously removed ovarian tissue:
 - Grasping of the peritoneum.
 - Bloodless lancing of the peritoneum with scissors.
 - Blunt dissection, without bleeding, of a peritoneal pouch at least 2.0 × 2.0 cm in size.
 - Checking that there is no bleeding and insertion of the 10–15 prepared particles of ovarian tissue into the peritoneal pouch.
 - (The decision for the number of particles being transplanted is based on the patient's wish and the amount of available ovarian tissue.)
 - Filling of the pouch, spontaneous occlusion with sufficiently wide dissection and loose insertion of the ovarian tissue particles.
 - (Suturing, or adhesive dressing—only applied if there is no complete spontaneous occlusion of the pouch.)
- Removal of the instruments, wound closure, sterile wound dressing.

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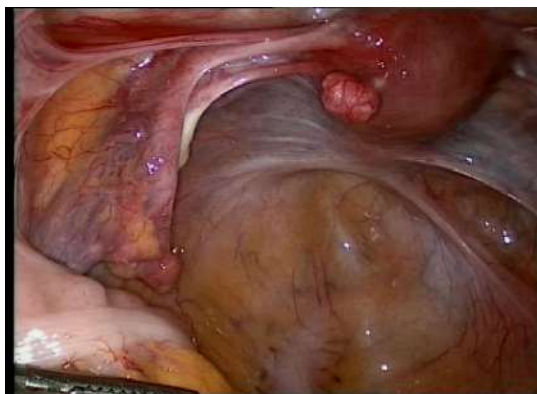
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Transplantation Number 50



50 transplantations
(3 POF; 6 Anal/Colon-Ca
16 transplantations less than 6
months ago)

10 pregnancies

→ **Absolute pregnancy rate:**
20%

→ **Adjusted pregnancy rate:**
33%

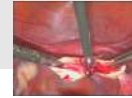
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Fertility protection: complications of surgery and results of removal and transplantation of ovarian tissue

Beckmann MW et al. Fertility protection:... Reprod Biomed Online 2017; in press



Perioperative morbidity (Ovarian tissue removal n=1302)

Intraoperative Endometriosis (Detection, Histology)	264/1302	(20.3%)
Adhesions	336/1302	(25.8%)
Congenital malformations internal genitalia	3/1302	(0.2%)
Previous undergone abdominal surgery	254/1302	(19.5%)
Radiotherapy	5/1302	(0.4%)

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Perioperative morbidity (Ovarian tissue transplantation n=71)

Intraoperative Endometriosis (Detection, Histology)	16/71	(22.5%)
Adhesions	30/71	(42.3%)
Congenital malformations internal genitalia	none	
Previous undergone abdominal surgery	14/71	(23.7%)
Radiotherapy	10/71	(14.1%)

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Intra-/Post-operative morbidity (Ovarian tissue removal n=1302)

Abdominal wall hematoma requiring revision

Postoperative urinary tract infection 2/1302 (0.2%)

Intra-/Post-operative morbidity (Ovarian tissue transplantation n=71)

Intraoperative complication (extensive adhesions,

switch from laparoscopy to laparotomy) 1/71 (1.4%)

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Fertility protection: complications of surgery and results of removal and transplantation of ovarian tissue

Beckmann MW et al. Fertility protection:... Reprod Biomed Online 2017; in press



Transplantations with estradiol > 100 pmol/L

at least 6 months after transplantation

(at least once) 36 (50.7%)

Women with menstrual cycle after

transplantation

47 (66.2%)

Pregnancies after transplantation

16 (22.5%)

(4 ongoing pregnancy, 3 miscarriages, births 9)

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Problems of Fertility protection focussed on technical aspects of removal and transplantation of ovarian tissue

Lack of published information

- about details of technical aspects (surgery, freezing)
- about complications of various technical aspects
- about patients' characteristics (i.e. oncological therapy)
- about the success rates (definition?)
- about long term outcome including survival

No comparison between different groups due to individual modifications!

Consensus conference including foundation of an international data base.

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Number 1 and Number 12 – it works!



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International (latest publication): A. Jensen in
JARG Dez. 2016 (online): 86 LB, 9 ongoing

Groups	Women (transplantated)	Live births	Cryo. technique
Donnez	19	9	SF
Meirow	kA	12	SF
Demeestere	kA	3	SF
Andersen	25	8	SF
Silber	11	6	SF/VF
Piver	kA	4	SF
Pellicer	33	9	SF
Revel	kA	2	SF
Dittrich	20	6	SF
Revelli	kA	1	SF
Callejo	kA	1	SF
Stern (Gook)	14	3	SF
Kawamura	kA	2	VF
Burmeister	2	1	SF
Rodriguez	6	1	SF
Tanbo	2	2	SF
Agarwal	kA	1	SF
Malkokin	kA	2	SF
Oktay	kA	1	SF
Nordic Countries	14	8	SF/VF
FertIPROTEKT	54	11	SF
Dunlop	kA	1	SF



Evaluation of the transplant register of FertiPROTEKT (Centers in D, A, CH):



- Transplanted patients: 107 transplanted patients: by 01.02.2017
- Births: 28 pregnancies with meanwhile 20 births in 16 patients
- Pregnancy rate of patients transplanted until the end of October 2016: 23%
- Average age at collection: 29.6 years; at transplantation: 34.1 years (average storage time 4.6 years)

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Age and pregnancies:

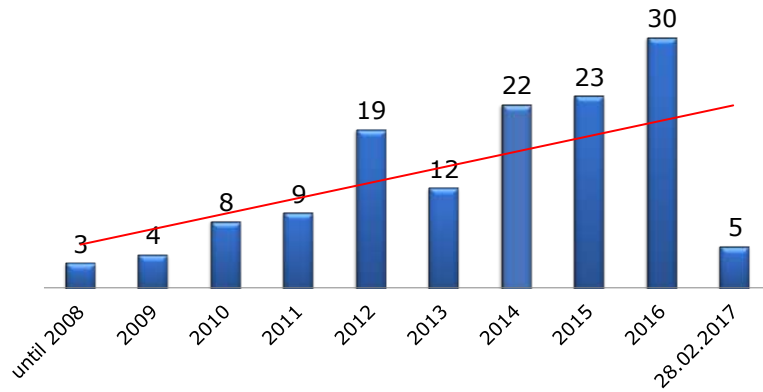
Age group	Subgroup 1 76 patients (101 transplantations)
<30y	
Number of patients (n)	29
Number of transplantations (n)	42/29
Radiotherapy of the pelvis/n/total (%)	3/29
Active tissue 1 year after transplantation n/total (%)	23/29 (79.3)
Pregnancies n/total (%)	12/29 (41.4), n=8
Deliveries n/total (%)	10/29 (34.5), n=7
30-34	
Number of patients (n)	26
Number of transplantations (n)	34/26
Radiotherapy of the pelvis/n/total (%)	4/26
Active tissue 1 year after transplantation n/total (%)	20/26 (76.9)
Pregnancies n/total (%)	11/26 (42.3), n=8
Deliveries n/total (%)	7/26 (26.9), n=6
35-39	
Number of patients (n)	18
Number of transplantations (n)	20/18
Radiotherapy of the pelvis/n/total (%)	2/18
Active tissue 1 year after transplantation n/total (%)	11/18 (61.1)
Pregnancies n/total (%)	3/18 (16.7), n=3
Deliveries n/total (%)	3/18 (16.7), n=3
≥40 (40 and 44y)	
Number of patients (n)	3
Number of transplantations (n)	5/3
Radiotherapy of the pelvis/n/total (%)	1/3
Active tissue 1 year after transplantation n/total (%)	1/3 (33.3)
Pregnancies n/total (%)	0/3 (0)
Deliveries n/total (%)	0/3 (0)

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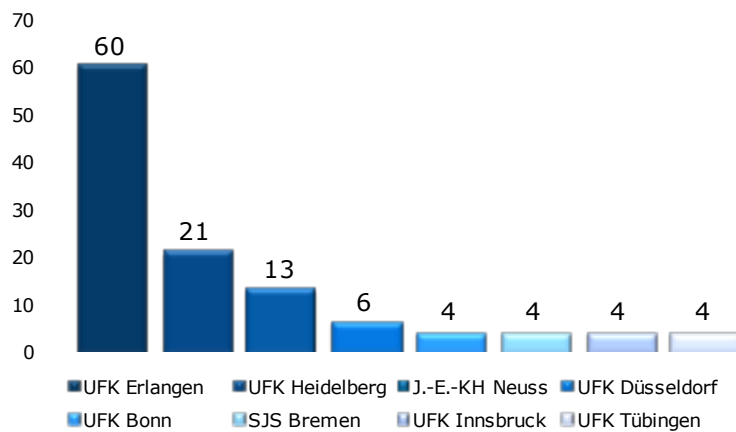
Transplantations in the Network FertiPROTEKT by 2017:



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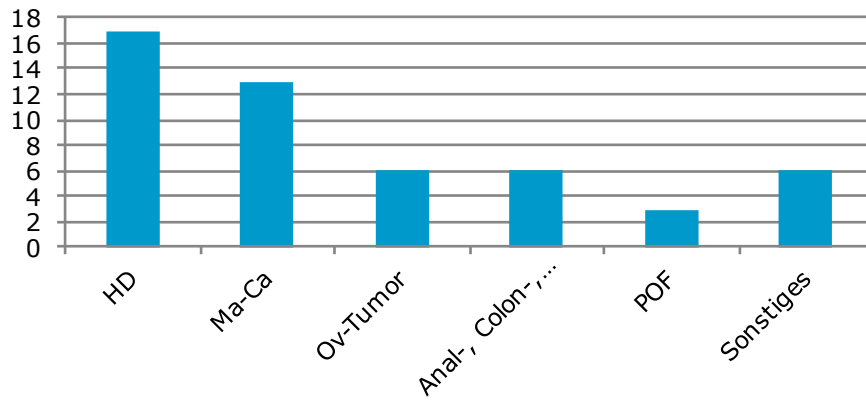
Number of transplantations in each center:



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Tumor entities in Erlangen:

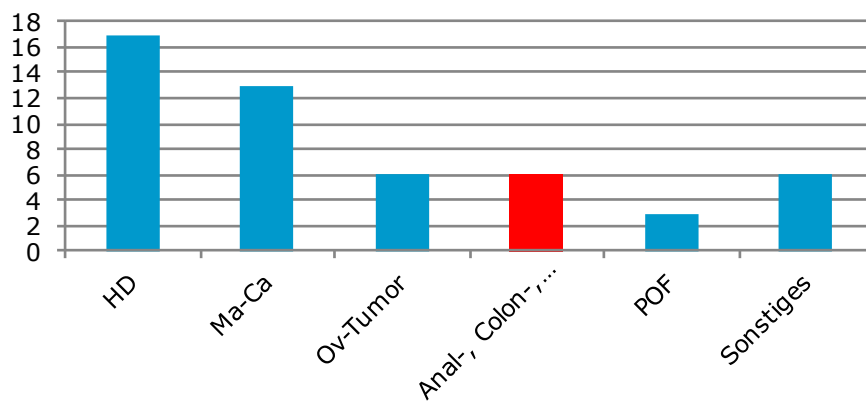


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Tumor entities in Erlangen:

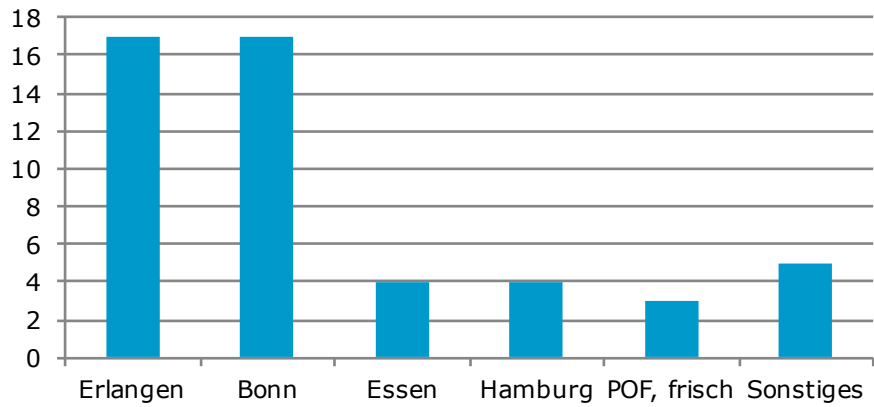


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Where does the ovarian tissue come from that is transplanted in Erlangen:



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After transplants of ovarian tissue in Erlangen 9 children have been born.



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Evaluation of the transplant of Erlangen

- 50 transplantations
- 10 pregnancies
- → **pregnancy rate: 20%**

But it must be considered:

- 3 POF; 6 Anal/Colon-Ca
- 16 transplantations less than 6 months ago

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