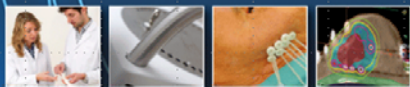


BrachyNext



Working Together to Shape the Future of
Brachytherapy

BrachyNext



Working Together to Shape the Future of
Brachytherapy

Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

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Disclosure

Vratislav Strnad, MD, PhD, Prof., has received consulting fees from Elekta.



Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

Facts

1. Longest experiences among all APBI techniques
 - a. Technique
 - b. Results
2. Variability, versatility, precision
3. High quality assurance and reproducibility
4. No dependence on patient motions

Fears

Patients:

1. Painful technique; scars remain
2. Bad acceptance by patients

Physicians:

1. Large experience and skill of physicians necessary
2. The patients in Europe don't have any (travel) problem with utilization of EBRT

Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

Facts

- 1) Longest experiences among all APBI techniques
 - a. Technique
 - ✓ Interstitial brachytherapy for breast cancer has been started
>45 years ago!!
 - ✓ The basic rules of interstitial brachytherapy have been defined in the same time...
 - ✓ First APBI Phase II trials started **>20 years ago**
 - ✓ Development and definition of basic rules of **image-guided brachytherapy techniques** in the same time
 - ✓ In this time, versatile **different brachytherapy techniques** have been developed: **multi-catheter techniques and single-catheter techniques**

Conservative treatment for breast cancer: long-term results (15 years).
Pierquin B, et al.
Département de Cancérologie, Hôpital Henri Mondor, Créteil, France.
Radiother Oncol. 1991;20(1):16-23.

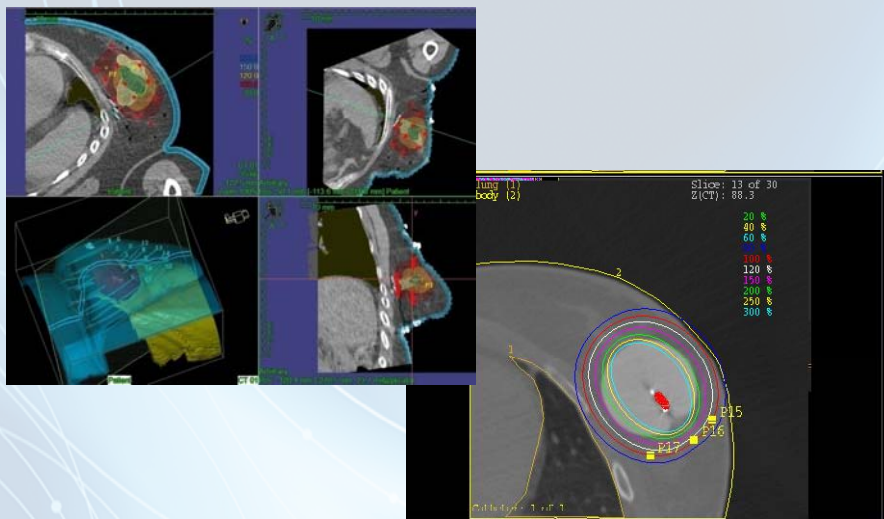


Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

Techniques

- 1) Multicatheter — interstitial brachytherapy
- 2) Single-Catheter — brachytherapy
 - 1) Proxima-Catheter
 - 2) SAVI-Catheter
 - 3) Contura-Catheter
 - 4) Electronic brachytherapy

Brachytherapy — Advantages and Disadvantages





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Facts

- 1) Longest experiences among all APBI techniques
 - a. Technique
 - b. Results
- 2) Variability, versatility, precision of brachytherapy techniques
- 3) High quality assurance and reproducibility
- 4) No dependence on patient motions

Fears

Patients:

- 1) Painful technique; scars remain
- 2) Bad acceptance by patients

Physicians:

- 1) Large experience and skill of physicians necessary
- 2) The patients in Europe don't have any (travel) problem with utilization of EBRT

EBRT BENCHMARK:

Randomized studies using EBRT with selected patients with prognostically favorable factors

Author/Study	No. of Pts (n)	Median Follow-up (years)	Local Recurrences, % (95% CI) (n)	Annual Local Recurrences, %
Touboul et al. (22), 1999 Retrospective statistical analysis, Paris	528*	7.0	9.8 (7.4–12.7) (52/528)	1.40
Liljegren et al. (23), 1999 Phase III Trial, Örebro	184*/381	9.1	7.1 (3.8–11.8) (13/184)	0.77
Veronesi et al. (24), 2001 Phase III Trial, Milano	294*/579	9.0	5.4 (3.1–8.7) (16/294)	0.60
Malstrom et al. (25), 2003 Multicentric Phase III trial	591*/1178	5.1	4.4 (2.9–6.4) (26/591)	0.86
Winzer et al. (26), 2004 Multicentric Phase III Trial	94*/347	6.3	4.3 (1.2–10.5) (4/94)	0.78
Fyles et al. (27), 2004 Phase III Trial, Toronto	386*/769	5.6	7.0 (4.7–10.0) (27/386)	1.25
Holli et al. (28), 2009 Multicentric Phase III Trial,	139*/264	12.6	11.5 (6.7–18.0) (16/139)	0.92

* Treated with external beam radiation therapy

Mean: 0.94%/year



APBI RESULTS:

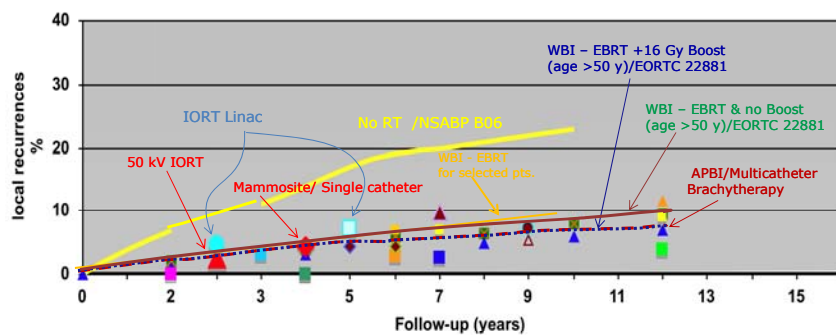
APBI brachytherapy studies using stringent patient selection criteria with adequate (>5 years) follow-up

Author/Study	No. of Pts (n)	Median Follow-up (years)	Local Recurrences, % (95% CI) (n)	Annual Local Recurrences, %
Polgar et al., 2009 Hungarian National Institute of Oncology, Phase II, Budapest	45	12.0	8.9 (2.5-21.2) (4/45)	0.80
Johansson et al., 2009 Örebro Med. Centre, Phase II, Örebro	51	7.2	5.9 (1.2-16.2) (3/51)	0.82
King, Kuske et al., 2000 Ochsner Clinic, Phase II, New Orleans	51	6.25	2.0 (0.05-10.5) (1/51)	0.32
Polgar et al., 2008 Hungarian National Institute of Oncology, Phase III, Budapest	88*/258	6.8	4.6 (1.3-11.2) (4/88)	0.66
Arthur et al., 2008 Multicentric Phase II, RTOG 95-17	99	7	6.1 (2.3-12.7) (6/99)	0.87
Mark et al., 2009 J Arrington Cancer Center, Phase II, Lubbock	192	5.4	4.2 (1.8-8.0) (8/192)	0.78
Antonucci, Vicini et al., 2009 William Beaumont Hospital, Phase II, Detroit	199	9.6	5.0 (2.4-9.1) (10/199)	0.52
Strnad et al., 2010 Multicentric Phase II, German-Austrian Study, Erlangen, Leipzig, Vienna, Linz	274	5.25	2.9 (1.3-5.7) (8/274)	0.55

* Treated with brachytherapy

Mean: 0.66%/year

Trial Results of Selected Patients With Prognostically Favorable Factors Using EBRT and Different APBI Techniques



- Selected pts.: no adjuvant RT
- EORTC 22881-10882 (age>50y, Boost)
- Virginia Commonwealth University
- University of Kansas Medical Center
- Hungarian Nat. Inst. of Oncology
- German-Austrian Trial
- IORT 50kV Intrabeam
- IORT Montpellier
- Liljegren
- Veronesi
- Fyles
- EORTC 22881-10882 (age>50 y, no Boost)
- William Beaumont Hospital
- Ochsner Clinic
- Massachusetts General Hospital
- Tufts New England Medical Center
- Mammosite Registry Trial
- IORT Milano
- Touboul
- Malstrom
- Winzer
- Holli



Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

Fact is that multicatheter brachytherapy technique offer to physician and to the patient:

- 1) **Longest experiences** among all APBI techniques
 - a. Technique
 - b. Results
- 2) **Variability, versatility, precision**
- 3) **High quality assurance and reproducibility**
- 4) **No dependence on patient motions**

Fears

Patients:

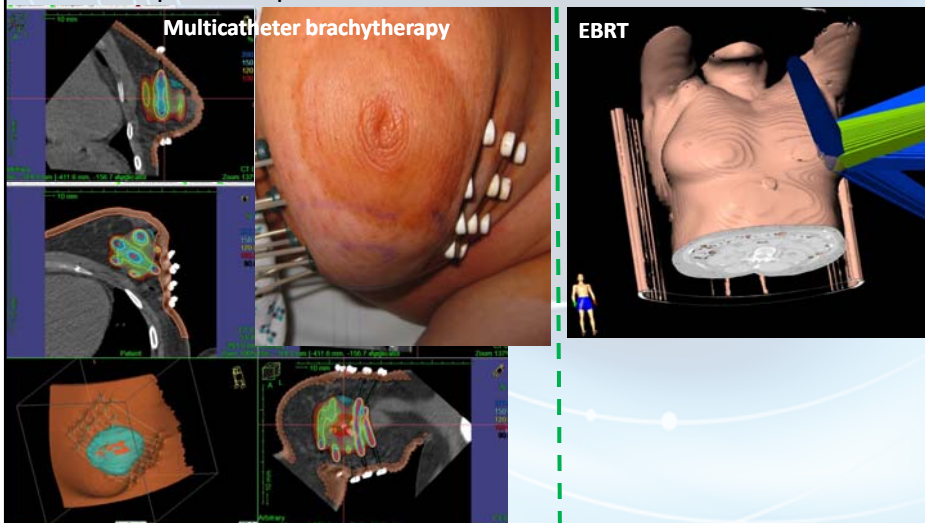
- 1) Painful technique; scars remain
- 2) Bad acceptance by patients

Physicians:

- 1) Large experience and skill of physicians necessary
- 2) The patients in Europe don't have any (travel) problem with utilization of EBRT

Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

- ✓ **Variability, versatility, precision**
- ✓ **High quality assurance and reproducibility**
- ✓ **No dependence on patient motions**

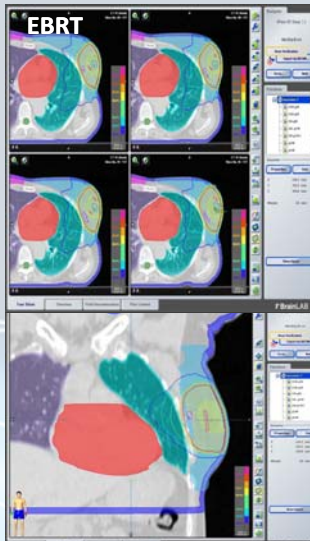
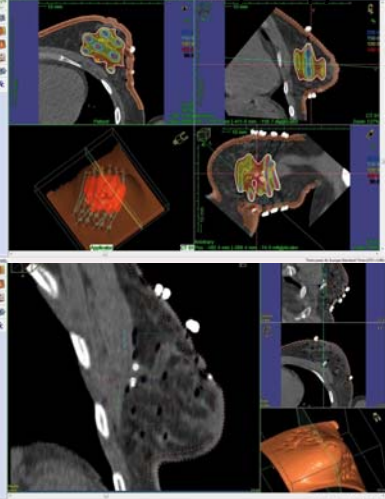




Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

- ✓ Variability, versatility, precision — High quality assurance and reproducibility
- No dependence on patient motions

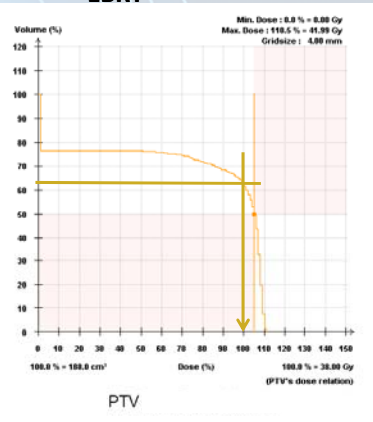
Multicatheter brachytherapy



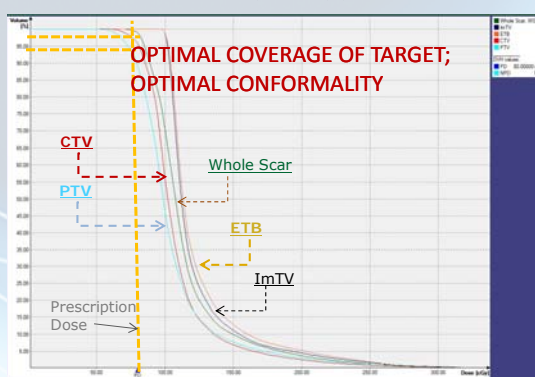
Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

- ✓ Variability, versatility, precision
- ✓ High quality assurance and reproducibility
- ✓ No dependence on patient motions

EBRT



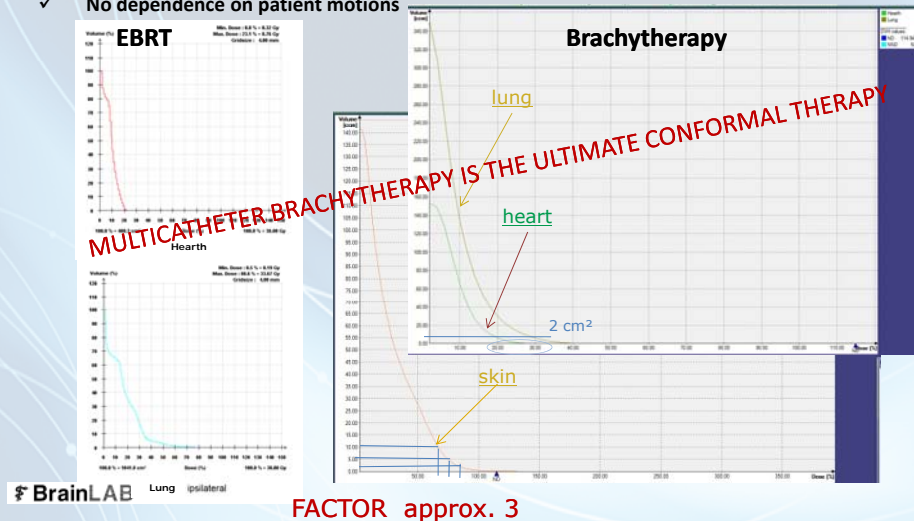
Brachytherapy





Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

- ✓ Variability, versatility, precision
- ✓ High quality assurance and reproducibility
- ✓ No dependence on patient motions



Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

Facts ✓

- 1) Longest experiences among all APBI techniques
 - a. Technique
 - b. Results
- 2) Variability, versatility, precision (coverage $\sim V_{100} \geq 95\%$)
- 3) High quality assurance and reproducibility
- 4) No dependence on patient motions

Fears

Patients:

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- 1) Large experience and skill of physicians necessary
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Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

Fears of Patients

1) Painful technique; scars remain

not true



Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

Fears of Patients

2) Bad acceptance by patients

Refusal rate in experienced department <5%

not true

„WHO CAN, DO IT.
WHO CANNOT, COMBATS IT“

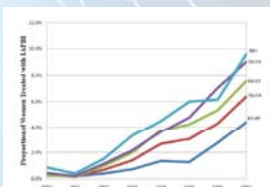


Figure 2. Implantable accelerated partial breast irradiation (IAPBI) use is shown by patient age from 2000 through 2007.

Original Article

Trends in the Use of Implantable Accelerated Partial Breast Irradiation Therapy for Early Stage Breast Cancer in the United States

Andrea H. Abdulk, MD, Elizabeth S. Hobbins, PhD, PhD and Todd M. Tuttle, MD, PhD

Cancer Month 00, 2011

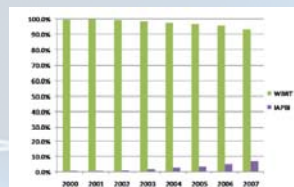


Figure 3. Trends in the use of whole-breast radiotherapy (WBRT) compared with implantable accelerated partial breast irradiation (IAPBI) are shown.



Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

Fears of Physicians

- 1) Large experience and skill of physicians necessary — consequently, it is a very scarcely used technique...

Experience and skill are necessary – but as for every medical activity!!

Technique is very easy...!

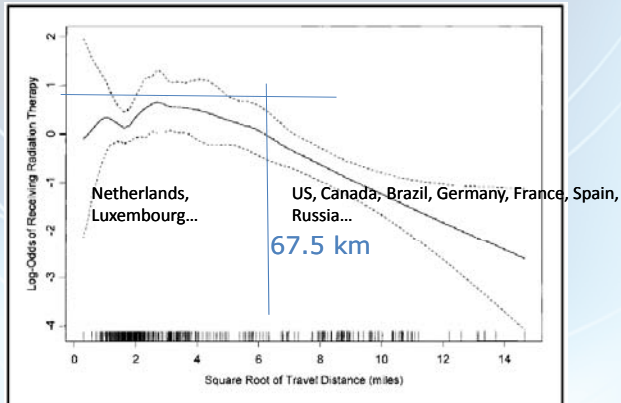


Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

not true for „large“ countries...

Fears of Physicians/Appeal

- 2) The patients don't have any (travel) problem with utilization of EBRT



Travel Distance to Radiation Therapy and Receipt of Radiotherapy Following Breast-Conserving Surgery

William F. Athas, Meg Adams-Cameron, William C. Hunt, Andrew Amir-Fazli, Charles R. Key

Journal of the National Cancer Institute, Vol. 92, No. 3, February 2, 2000
BRIEF COMMUNICATIONS 209

Fig. 1. Log-odds of receiving radiation therapy following breast-conserving surgery for early-stage breast cancer is plotted against the square root of travel distance to the nearest radiation-treatment facility. The



Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

SUMMARY OF FEARS

FEARS	Is it true?
Painful technique; scars remain	NO
Bad acceptance by patients	NO
Experience and skill of physicians necessary	<p>Please present the FACTS!</p> <ol style="list-style-type: none"> 1) Longest experiences among all APBI techniques <ol style="list-style-type: none"> a. Technique b. Results
The patients don't have (travel) problem with EBRT	<ol style="list-style-type: none"> 2) Variability, versatility, precision (coverage $\sim V_{100} \geq 95\%$) 3) High quality assurance and reproducibility 4) No dependence on patient motions

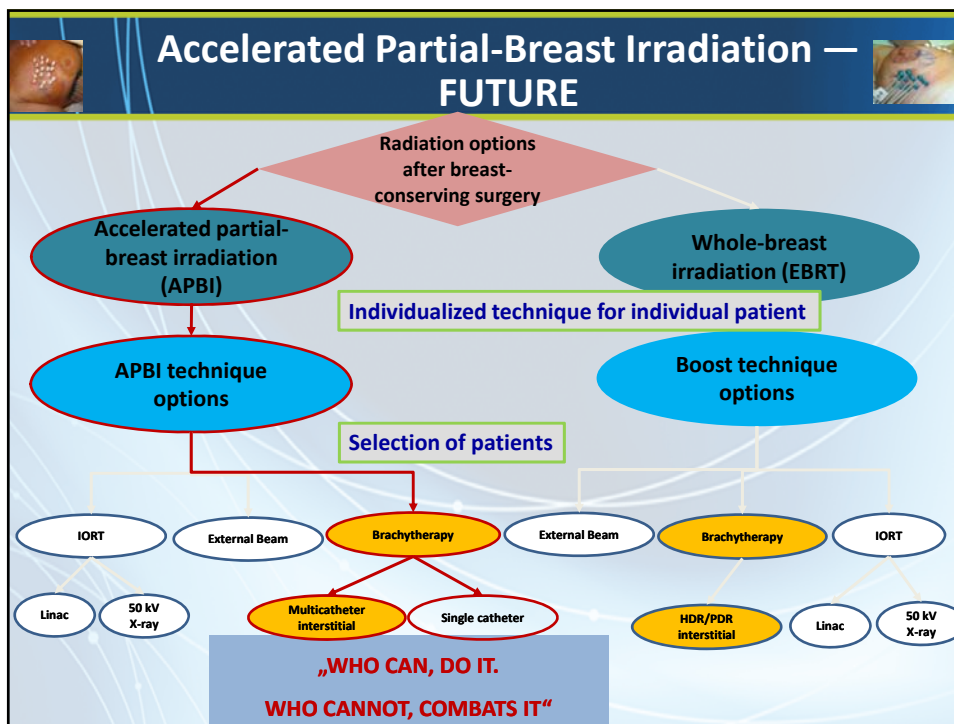
How to allay fears of patients and colleagues?

Breast Brachytherapy: How to Allay Fears of Patients and Colleagues, and What Are Our Expectations for the Future?

1. APBI using multicatheter brachytherapy works excellent
2. Multicatheter brachytherapy is (one of) the best technique(s) for APBI

TAKE-HOME MESSAGE





Future

- **Selection guidelines** for appropriateness of APBI using brachytherapy **will need to be constantly refined** to reflect the published results of clinical outcomes
- Particular help will come from the recently closed **GEC-ESTRO** and **NSABP B-39/RTOG 0413** trials
- **Improvements in brachytherapy technology** with “easy implant devices”—multi-lumen/multi-strut applicators—to allow for customization of dosimetry to essentially “paint” dose to the lumpectomy site with adequate margins while **minimizing dose to adjacent normal structures** — similar as multicatheter brachytherapy