

GBCS

GOIANIA
BREAST CANCER
SYMPOSIUM 2015



**USE OF MAGNETIC RESONANCE
IMAGING FOR PREDICTION OF NIPPLE
INVOLVMENT IN BREAST CANCER**

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INTRODUCTION

- ❖ Growing indication of nipple sparing mastectomy
- ❖ Occult tumor cells: safe?
- ❖ Surgical reintervention
- ❖ Local and nac recurrence

NAC INVOLVEMENT

MASTECTOMY SPECIMENS

| STUDY | Nº | NAC INVOLVEMENT (%) |
|------------------------------|------|---------------------|
| Smith <i>et al</i> , 1976 | 541 | 12,2 |
| Lagios <i>et al</i> , 1979 | 149 | 30 |
| Wertheim <i>et al</i> , 1980 | 1000 | 23 |
| Luttges <i>et al</i> , 1987 | 166 | 38 |
| Santini <i>et al</i> , 1989 | 1291 | 12 |
| Laronga <i>et al</i> , 1999 | 286 | 5,6 |
| Simmons <i>et al</i> , 2002 | 217 | 6,7 |
| Sikand <i>et al</i> , 2005 | 220 | 7 |
| Brachtel <i>et al</i> , 2009 | 316 | 29 |
| Li <i>et al</i> , 2010 | 2323 | 14,2 |
| Billar <i>et al</i> , 2011 | 392 | 24 |

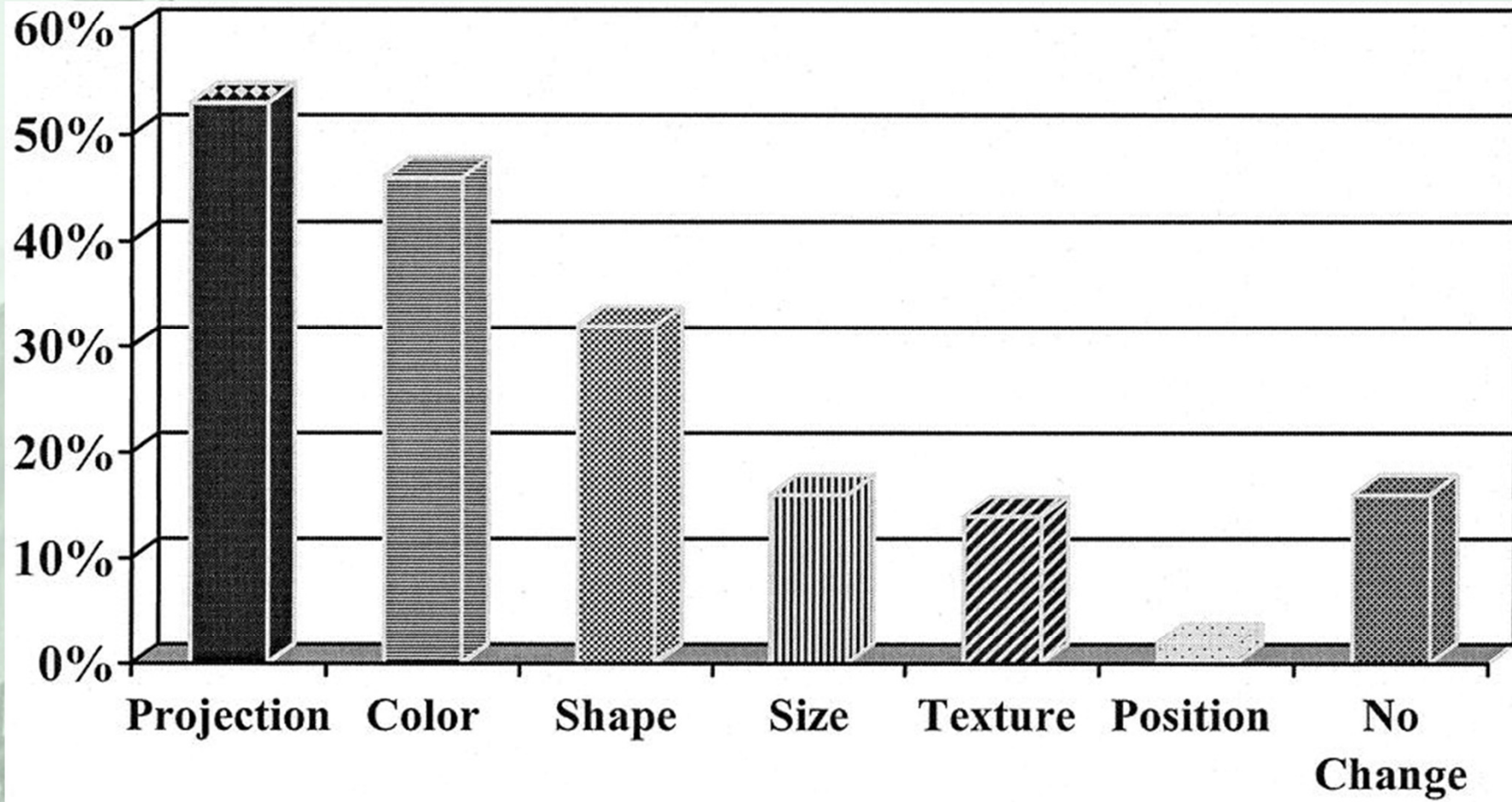
LOCAL AND NAC RECURRENCES

| Ref. | Year | n | Stage | Follow-up (mo) | Nipple areola complex recurrence | Local recurrence |
|---|------|-----|--------|----------------|----------------------------------|------------------|
| Gerber <i>et al</i> ^[25] | 2009 | 61 | 0- I | 59 | 1.6 | 5.4 |
| Garcia-Etienne <i>et al</i> ^[15] | 2006 | 42 | 0- I | 10.5 | 0 | 0 |
| Bistoni <i>et al</i> ^[106] | 2006 | 10 | 0- I | 36 | 0 | 0 |
| Voltura <i>et al</i> ^[50] | 2008 | 51 | 0-III | 18 | 0 | 5.9 |
| Crowe <i>et al</i> ^[14] | 2004 | 54 | 0- II | 41 | 0 | 0 |
| Petit <i>et al</i> ^[104] | 2005 | 579 | 0-I | 19 | 0 | 0.9 |
| Sacchini <i>et al</i> ^[16] | 2006 | 192 | 0- III | 24.6 | 0 | 3 |
| Paepke <i>et al</i> ^[103] | 2009 | 109 | 0-III | 34 | 0 | 1.83 |
| Babiera <i>et al</i> ^[107] | 2010 | 54 | 0- III | 15 | 0 | 0 |
| Benediktsson <i>et al</i> ^[105] | 2008 | 216 | 0- III | 156 | 0 | 8.5 |
| Munhoz <i>et al</i> ^[33] | 2013 | 158 | 0- II | 65.6 | 0 | 3.7 |

Munhoz AM et al. World J Clin Oncol. 2014.

NAC RECONSTRUCTION

CAUSES OF INSATISFACTION



NAC INVOLVEMENT

RISK FACTORS

- ❖ **Tumor size**
- ❖ **Distance from the nac**
- ❖ **Multicentric disease**
- ❖ **Extensive DCIS**
- ❖ **Linfovascular invasion**
- ❖ **High nuclear grade**
- ❖ **HER2 hiperexpression**

*Lambert PA et al. J Am Coll Surg,
2000*

*Li W et al. Intern J Surg Pathol,
2011.*

NAC INVOLVEMENT

IMAGINE PROCEDURES

Mammography }
Thermography } **low accuracy**
Ultrasound }
MRI: few studies (case reports)

OBJECTIVE

To evaluate the accuracy of MRI for prediction of nipple involvement in breast cancer





METHOD

PROSPECTIVE STUDY

170 Total Mastectomy Specimens

19 (11,2%) DCIS

151 (87,8% Ductal Invasive Carcinoma Stages I, II and IIIa

METHOD

MRI PRE OPERATORY (1.5T)

Evaluated Parameters:

- ❖ **Type of index lesion enhancement (nodular or not nodular)**
- ❖ **Size of index lesion**
- ❖ **Enhancement extending from the index lesion to base of papilla**
- ❖ **Thickening of the areola**
- ❖ **Papilla retraction**
- ❖ **Size of papilla compared to contralateral**

METHOD

- ❖ Paraffin embedded tissues
- ❖ Histological sections of 3 μ m
- ❖ DCIS
- ❖ IDC
- ❖ ILC

METHOD

**A single radiologist blinded to anatomopathological
results reviewed MRI exams**



RESULTS

| | CASES | (%) |
|---------------------|-------|------|
| PAPILLA INVOLVEMENT | 35 | 21,8 |
| HIGH GRADE DCIS | 19 | 11,2 |
| LOW GRADE DCIS | 3 | 1,8 |
| INVASIVE CARCINOMA | 13 | 7,6 |

RESULTS

SIGNIFICANT PARAMETERS IN UNIVARIATE ANALYSES

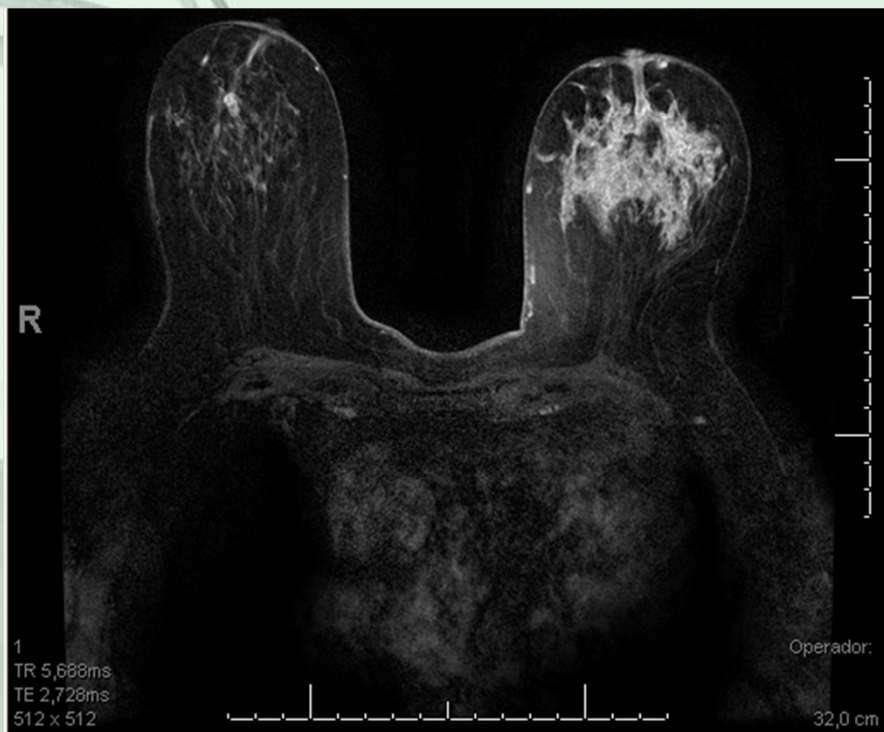
| PARAMETER | P |
|--|----------|
| Enhancement extending from the index lesion to base of papilla yes/no | < 0,001 |
| Distance between index lesion and base of papilla > or < 2cm | < 0,001 |
| Enhancement of the papilla yes/no | < 0,001 |
| Papilla retraction yes/no | < 0, 001 |

RESULTS

SIGNIFICANT PARAMETERS IN MULTIVARIATE ANALYSES

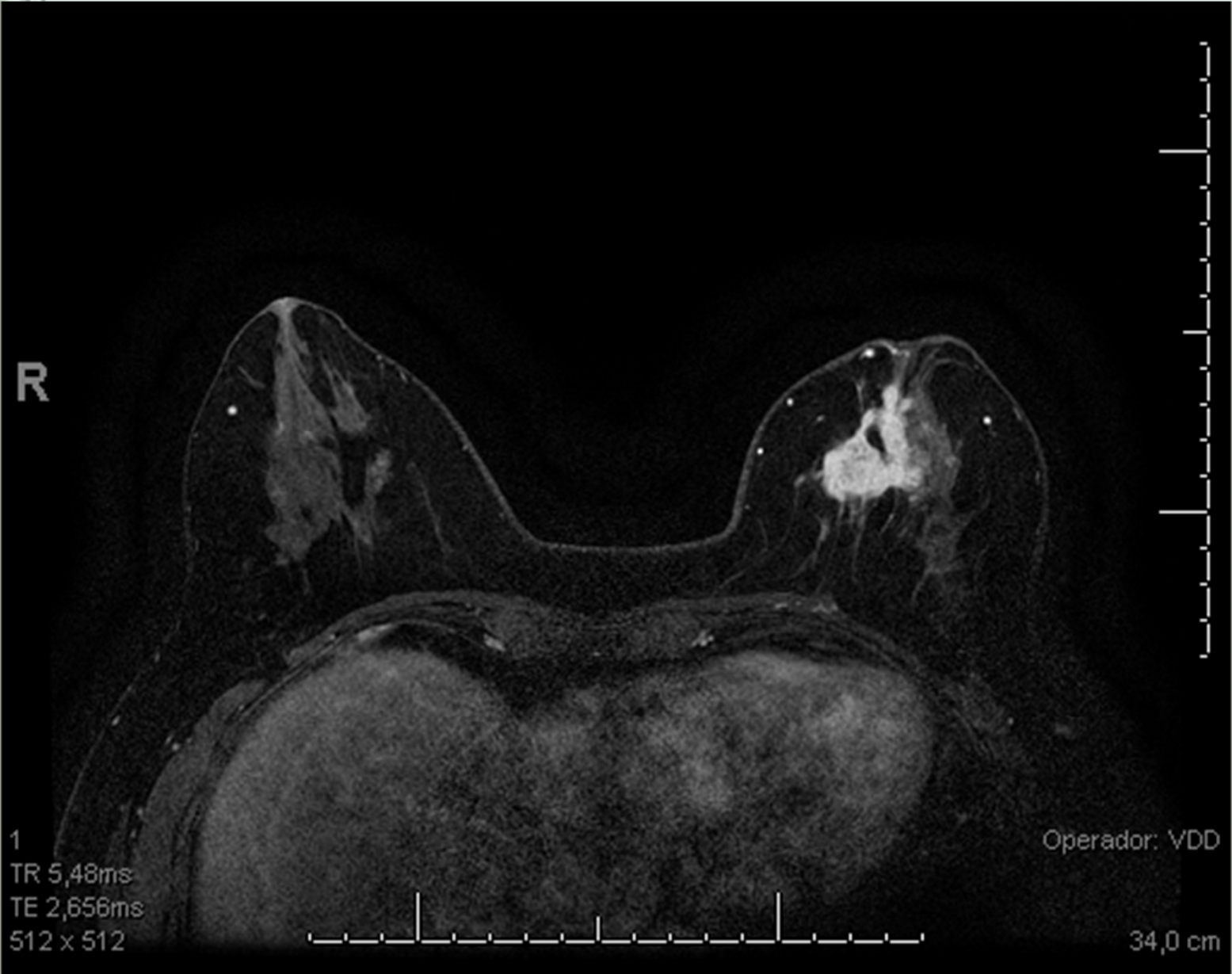
| PARAMETER | P |
|--|----------|
| Enhancement extending from the index lesion to base of papilla yes/no | < 0,001 |
| Papilla retraction yes/no | < 0, 001 |

Enhancement extending from the index lesion to base of papila



de São
de Oliveira
DO SAUDE
GRUPO DE

Papilla Retraction



RESULTS

**WHEN BOTH PARAMETERS ARE NEGATIVE PAPILLA IS
FREE OF CANCER IN 90% OF CASES**

