# Poly Implant Prothèse (PIP) breast implants: final report of the Expert Group

*Sir Bruce Keogh, NHS Medical Director*

## Volume 2: Appendices

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# Poly Implant Prothèse (PIP) breast implants: final report of the Expert Group

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## Volume 2: Appendices


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# Appendix I: Composition and toxicity of PIP silicone

**Report of the toxicology subgroup**

## Introduction

One aim of the expert group has been to determine whether, and to what extent, PIP breast implant silicone represents a risk to human health.

2. In pursuing this, two questions have been addressed:

- Does the chemical composition of PIP silicone differ from medical grade silicone used in approved breast implants?
- Does PIP silicone have potential health hazards not associated with medical grade silicone?

## Chemical composition of PIP breast implant silicone

3. MHRA commissioned LGC to perform analytical work. For this purpose 5 samples of PIP breast implants and 6 batches of medical grade breast implants were studied. The PIP breast implants provided for analysis were selected to represent a range of batch numbers and expiry dates.

4. LGC used FTIR (Fourier Transform Infrared Spectroscopy), GC-MS (Gas Chromatography Mass Spectrometry) and ICP-MS (Inductively Coupled Plasma Mass Spectrometry).

5. The key findings were as follows:

*Organic*

- There was no evidence in any silicone for any significant organic impurities
- Compared with medical grade silicone PIP silicone displayed significantly increased levels of low molecular weight siloxanes
- There were no other differences between PIP silicone and medical grade silicone
- There were no differences in the composition of individual batches of PIP silicone (other than siloxanes)

*Inorganic*

- There were no significant inorganic impurities in any batch of silicone
- There were no major differences between any of the batches tested
- A low level of caesium (0.3 ppm) was found in PIP silicone, but not in medical grade silicone
- Platinum levels were found to be lower in PIP silicone (0.1ppm) than in medical grade silicone (3ppm)

6. The important conclusions that can be drawn from this are:

- *PIP batches do not display batch to batch variation with respect to chemical composition*
- *The only potentially biologically relevant differences between PIP silicone and medical grade silicone is that in the former there are increased levels of siloxanes*

These data are consistent with comparable analyses conducted by the French regulatory authority Agence Francaise de Sécurité Sanitaire des Produits de Santé (AFSSAPS, now the Agence Nationale de Sécurité du Medicament, ANSM), and by the Australian regulatory authority the Therapeutic Goods Administration (TGA).

## Toxicity testing of PIP silicone

7. Currently information is available regarding genotoxicity, cytotoxicity and skin irritation:

*Genotoxicity*

Studies commissioned by the MHRA and AFSSAPS in 2010 revealed that PIP silicone was without genotoxic potential.

*Cytotoxicity*

Testing by AFSSAPS in 2010 showed the absence of cellular cytotoxicity. More recently cytotoxicity tests commissioned by TGA have yielded the same negative result.

*Skin irritation*

In 2010 AFSSAPS reported that PIP silicone was positive in a rabbit assay in which the test material is administered intradermally.

8. More recently the TGA commissioned two separate studies, one performed in Australia and a second in Europe. In both instances all batches of test material, including organic and aqueous extracts of PIP silicone and PIP implant shells, were uniformly negative. Our view currently is that there is no potential for skin irritation.

## Toxicity of siloxanes – general considerations

9. Against the background summarised above, attention now focuses on the potential toxicity of siloxanes, and whether their increased concentrations in PIP implant silicone represents a health risk. The most common, and the most thoroughly investigated, siloxanes are:

*Octamethylcyclotetrasiloxane (D4)*
*Decamethylcyclopentasiloxane (D5)*
*Dodecamethylcyclohexasiloxane (D6)*

10. Siloxanes are used in a wide variety of applications, including: sealants, paints, cosmetics and personal care products, waxes and polishes, textiles, paper coatings, mechanical fluids and others. Such exposures collectively may lead to detectable

levels of siloxanes in the body. Thus, in 2005 results from Swedish National Screening Programme were published by the Swedish Environmental Research Institute. As part of that survey which focused on siloxanes, breast milk samples from 49 unselected and unidentified women were analysed. Eleven of those 49 samples were found to contain detectable levels of one or more of D4, D5 and D6.

- Siloxanes are not genotoxic
- It is generally accepted that these materials exhibit low acute toxicity following exposure by oral, dermal or inhalation administration
- They fail to cause skin or eye irritation
- They do not cause allergic sensitisation

11. One issue that needs to be addressed derives from a review of D4 by the SCCP (Scientific Committee on Consumer Products) dated 2005. In that review it was reported that inhalation exposure of rats to D4 was associated with delayed ovulation associated with reduced fertility. The NOAEL was judged to be 300ppm by inhalation. On that basis siloxane D4 is identified under the CLP (Classification, Labelling and Packaging) regulations as having adverse effects on fertility.

12. Although D4 shows very weak estrogenic activity in a rat uterotrophic assay, the reproductive toxicity observed is believed not to be attributable to a direct estrogen receptor (ER)-mediated effect. Rather it is proposed that the effects seen are due to D4 causing a delay or blockage of the luteinising hormone surge that is required for optimal timing of ovulation. The opinion of the SCCP is as follows:

> "It can be concluded that the reproductive effects of D4 in female rats and mice are related to rodent specific imbalance in the normal hormone milieu. Such imbalances are common in rodents and are of little relevance to humans".

13. Moreover, 2010 the Scientific Committee for Consumer Safety (SCCS) published this opinion:

> "The SCCS is of the opinion that cyclomethicone (D4, D5) does not pose a risk for human health when used in cosmetics"

## Siloxanes risk assessment

14. To date the only hazard of potential concern has been evidence from rodent studies of effects on female fertility. However, the opinion of the SCCP was that this does not represent a risk to human health.

15. It is nevertheless appropriate to consider the concentrations of siloxanes D4, D5 and D6 in PIP implants, and in medical grade implants, should formal risk assessments be required in the light of emerging data.

16. Currently it is uncertain whether LGC will be able to supply information on the concentrations of siloxanes in the batches of PIP and medical grade silicone that they have analysed (summarised above). In the absence of those data it is necessary to rely on the results of analyses conducted and reported by TGA.

17. In March 2012 TGA reported the following information summarising the concentrations of D4, D5 and D6 silicones from a range of batches of PIP silicone:

| Siloxane | Concentration (ppm) median and (range) |
|---|---|
| D4 | 136 (0-261) |
| D5 | 434 (0-710) |
| D6 | 474 (0-1005) |

In the TGA report it was claimed that the above results were generally consistent with those obtained by AFSSAPS. Moreover, information provided to TGA by suppliers of the raw materials that were used to produce the gel used in PIP breast implants suggests that the above values provide a reasonable estimate of the levels of D4, D5 and D6 siloxanes.

18. No similar data are available regarding the concentrations of siloxanes found within medical grade implant silicone. However, AFSSAPS has reported that NUSIL silicone contained less than 50ppm low molecular mass silicones.

## Overview and current position

19. On the basis of currently available information:

- PIP silicone is not gentoxic or cytotoxic, and does not cause skin irritation
- There is no evidence for variation between batches of PIP with regard to chemical composition (other than siloxanes)
- PIP silicone does not contain any major organic or inorganic impurities
- PIP silicone contains significantly higher concentrations of siloxanes (10-fold or greater) than does medical grade silicone
- Siloxanes are not genotoxic, do not cause skin or eye irritation, fail to cause allergic sensitisation, and do not display acute toxicity
- Siloxane D4 has been found to cause reduced female fertility in rats following inhalation exposure to concentrations of 300ppm or greater. However, this is not regarded as representing a risk to human health.

- **PIP breast implant silicone differs from medical grade silicone only with respect to an increased concentration of siloxanes. This is not believed to represent a risk to human health.** This conclusion is consistent with the views of the TGA as reported in March 2012: "*The results of the TGA testing for these small silicone molecules* (siloxanes) *confirms the results obtained by the French authorities, but the presence of these chemicals (which are widely used in cosmetics) is not considered a health risk*".

# Appendix II: Data analysis

**Report of the data subgroup**

## Retrospective data collection

*Implant data*

Centres reported around 131,000 women receiving 238,000 branded implants, including 26,000 women with PIP implants. Totals are shown in Table 1 – these are estimates based on centres' assessments of the number of implant operations carried out; individual patient implant records were usually not accessed. Women receiving reconstructive surgery will generally only receive a single implant.

Note: throughout Appendix II the labels M1, M2 and M3 are used in tables and charts to indicate comparison data concerning three other manufacturer's silicone gel-filled breast implants in common use within the UK.

| | | M1 | M2 | M3 | PIP | Total |
|---|---|---|---|---|---|---|
| **Women** | Augmentations | 67029 | 8470 | 8326 | 25351 | **109176** |
| | Reconstructions | 8675 | 4653 | 7799 | 631 | **21758** |
| | **Total** | **75704** | **13123** | **16125** | **25982** | **130934** |
| | | | | | | |
| **Implants** | Augmentations | 132022 | 16780 | 16428 | 51730 | **216961** |
| | Reconstructions | 8226 | 4499 | 7719 | 648 | **21092** |
| | **Total** | **140248** | **21279** | **24147** | **52378** | **238052** |

*Table 1: Implant estimates included in retrospective analysis*

*Explant data and survival analysis*

2. Details of 5870 branded explants were reported, of which 5575 had an implant date. Raw rates were computed, as a percentage of all women with each brand of implant, for:

- all explants
- explants in which an implant failure was found ('finding at explant', any of 'rupture already known', 'rupture unexpected finding', ' significant silicone bleed' in either implant OR reason at explant 'signs of inflammation, silicone leak without evidence of rupture')
- explants in which clinical signs were found (any of 'breast inflammation[1] or lumpiness', 'lymphadenopathy' in either implant OR reason at explant 'signs of inflammation, silicone leak without evidence of rupture').

3. Approximate survival analysis was carried out for all three types of outcome, using (year-of-explant - year-of-implant) as the survival time, and (2012 - year-of-implant) as the follow-up for cases that had not been explanted. Details for the pooled data are shown in Table 2. Table 3 shows the main results for important subgroups of the data.

4. Important caveats include:

- Implant numbers are necessarily approximate
- Some explants may be from other centres and hence not directly relate to the implant totals for each centre
- Degree of follow-up is unknown, and would be expected to be low for private clinics. Hence explants will generally be undercounts
- Since March 2010, publicity surrounding PIP implants has led to additional concern and explants, particularly since December 2011, and this could bias the results against PIP. Table 3 therefore presents results restricted to pre-2010 explants
- PIP implants have generally been used for augmentation in private clinics with limited follow-up, and rarely in NHS hospitals for reconstruction, which tend to have better follow-up. This will, if anything, bias the results in favour of PIP. Table 3 presents results for non-NHS augmentation implants (restricted to pre-2010 explants), and all NHS reconstruction implants.

5. It is not therefore possible to make precise estimates on the basis of the available data, and a considerable degree of judgment is required to interpret the results. 95% confidence intervals are provided for the relative risks[2] (Pip/non-PIP ratios) but the large sample sizes will give an undue precision to the results, whereas the uncertainties arise more from limitations in the follow-up.

[1] 'Inflammation' in this context is a term used to describe any local reaction in breast tissue to the presence of an inert foreign body, rather than an acute inflammatory reaction.
[2] The log(relative risk) is assumed to have variance equal to the sum of the inverse of the number of events in each arm

| | | Explanted | | | |
|---|---|---|---|---|---|
| **Type** | **Implants** | **n** | **%** | **5-year rate (%)** | **10-year rate (%)** |
| All | 130934 | 5575 | 4.3% | 4.6% | 7.2% |
| M1 | 75704 | 2507 | 3.3% | 3.9% | 5.7% |
| M2 | 13123 | 925 | 7.0% | 7.2% | 10.7% |
| M3 | 16125 | 837 | 5.2% | 5.6% | 7.5% |
| Not PIP | 104952 | 4,269 | 4.1% | 4.6% | 6.6% |
| | | | | | |
| PIP | 25982 | 1306 | 5.0% | 4.0% | 7.7% |
| | | | | | |
| **PIP/non-PIP ratio** | | | **1.2** | **0.9** | **1.2** |
| 95% intervals | | | | 0.8 to 0.9 | 1.1 to 1.3 |
| | | **Explanted with implant failure** | | | |
| **Type** | **Implants** | **n** | **%** | **5-year rate (%)** | **10-year (%)** |
| All | 130934 | 677 | 0.5% | 0.5% | 1.4% |
| M1 | 75704 | 143 | 0.2% | 0.2% | 0.6% |
| M2 | 13123 | 59 | 0.4% | 0.4% | 1.1% |
| M3 | 16125 | 43 | 0.3% | 0.3% | 0.5% |
| Not PIP | 104952 | 245 | 0.2% | 0.3% | 0.7% |
| | | | | | |
| PIP | 25982 | 432 | 1.7% | 1.2% | 3.1% |
| | | | | | |
| **PIP/non-PIP ratio** | | | **7.1** | **4.7** | **4.5** |
| 95% intervals | | | | 3.3 to 6.5 | 3.9 to 5.3 |
| | | **Explanted with clinical signs** | | | |
| **Type** | **Implants** | **n** | **%** | **5-year rate (%)** | **10-year (%)** |
| All | 130934 | 461 | 0.4% | 0.4% | 0.9% |
| M1 | 75704 | 115 | 0.2% | 0.2% | 0.4% |
| M2 | 13123 | 51 | 0.4% | 0.4% | 0.8% |
| M3 | 16125 | 49 | 0.3% | 0.3% | 0.5% |
| Not PIP | 104.952 | 215 | 0.2% | 0.2% | 0.5% |
| | | | | | |
| PIP | 25982 | 246 | 0.9% | 0.7% | 1.9% |
| | | | | | |
| **PIP/non-PIP ratio** | | | **4.6** | **3.1** | **4.2** |
| 95% intervals | | | | 2.5 to 3.9 | 3.5 to 5.0 |

*Table 2. Estimated rates of women undergoing explant from pooled data, with implant problem and with clinical signs.*

6. Overall rate of explants: There is little evidence of PIP having an overall explant rate greater than other implants

7. Rate of explant with an implant failure: Survival estimates for all data are 1.2% at 5 years, 3.1% at 10-years, which is around 4.5 x rate of other branded implants (RR ~ 4.5). Considering only pre-January 2010 explants, the estimates are lower but retain the excess risk from PIP: 0.6% at 5 years, 0.9% at 10 years, (RR ~ 2.8). For non-NHS augmentation implants the relative risk is higher, around 5. Few PIP implants were used for NHS reconstruction, but an excess risk was still observed. Overall, a relative risk of around 2-6 is reasonable.

8. Rate of explant with clinical signs: Survival estimates are 0.7% at 5 years, 1.9% at 10-years, which is around 3-4 x rate of other branded implants (RR ~ 3-4). Considering only pre-January 2010 explants, the estimates are lower but retain the excess risk from PIP: 0.4% at 5 years, 0.6% at 10 years, (RR ~ 2.0). Other subgroups showed a pattern similar to implant problems. A relative risk of around 2-5 appears appropriate.

| | | | **Explanted with implant failure** | | | | **Explanted with clinical signs** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | *Implants* | *n* | *%* | *5-year rate (%)* | *10-year (%)* | *n* | *%* | *5-year rate (%)* | *10-year (%)* |
| **Pre-2010 explants** | *Not PIP* | 70,402 | 144 | 0.2% | 0.2% | 0.3% | 303 | 0.4% | 0.2% | 0.2% |
| | *PIP* | 25452 | 133 | 0.5% | 0.6% | 0.9% | 271 | 1.1% | 0.4% | 0.6% |
| | ***PIP/non-PIP ratio*** | | **2.6** | | **2.8** | **2.8** | | **2.5** | **2.0** | **2.3** |
| | | 95% intervals | | | 2.2 to 3.6 | 2.2 to 3.6 | | | 1.5 to 2.7 | 1.8 to 3.0 |
| **Non-NHS augmentation pre-2010** | *Not PIP* | 52,329 | 51 | 0.1% | 0.1% | 0.1% | 31 | 0.1% | 0.1% | 0.1% |
| | *PIP* | 24509 | 107 | 0.4% | 0.5% | 0.8% | 71 | 0.3% | 0.3% | 0.4% |
| | ***PIP/non-PIP ratio*** | | **4.5** | | **4.7** | **6.5** | | **4.9** | **5.5** | **6.7** |
| | | 95% intervals | | | 3.3 to 6.6 | 4.7 to 9.1 | | | 3.6 to 8.5 | 4.4 to 10.2 |
| **NHS reconstruction** | *Not PIP* | 20,726 | 122 | 0.6% | 0.5% | 1.3% | 121 | 0.6% | 0.6% | 1.0% |
| | *PIP* | 630 | 12 | 1.9% | 1.9% | 1.9% | 8 | 1.3% | 1.3% | 1.3% |
| | ***PIP/non-PIP ratio*** | | **3.2** | | **3.5** | **1.5** | | **2.2** | **2.3** | **1.3** |
| | | 95% intervals | | | 1.9 to 6.4 | 0.8 to 2.7 | | | 1.1 to 4.6 | 0.7 to 2.7 |

*Table 3: Estimated rates of women undergoing explant for important subsets of data, with implant problem and with clinical signs.*

9. Figures 1 and 2 show the 'survival' curves for women before being explanted with either implant failure (Figure 1) or clinical signs (Figure 2). The disparity between PIP and other implant brands is apparent by 5 years.

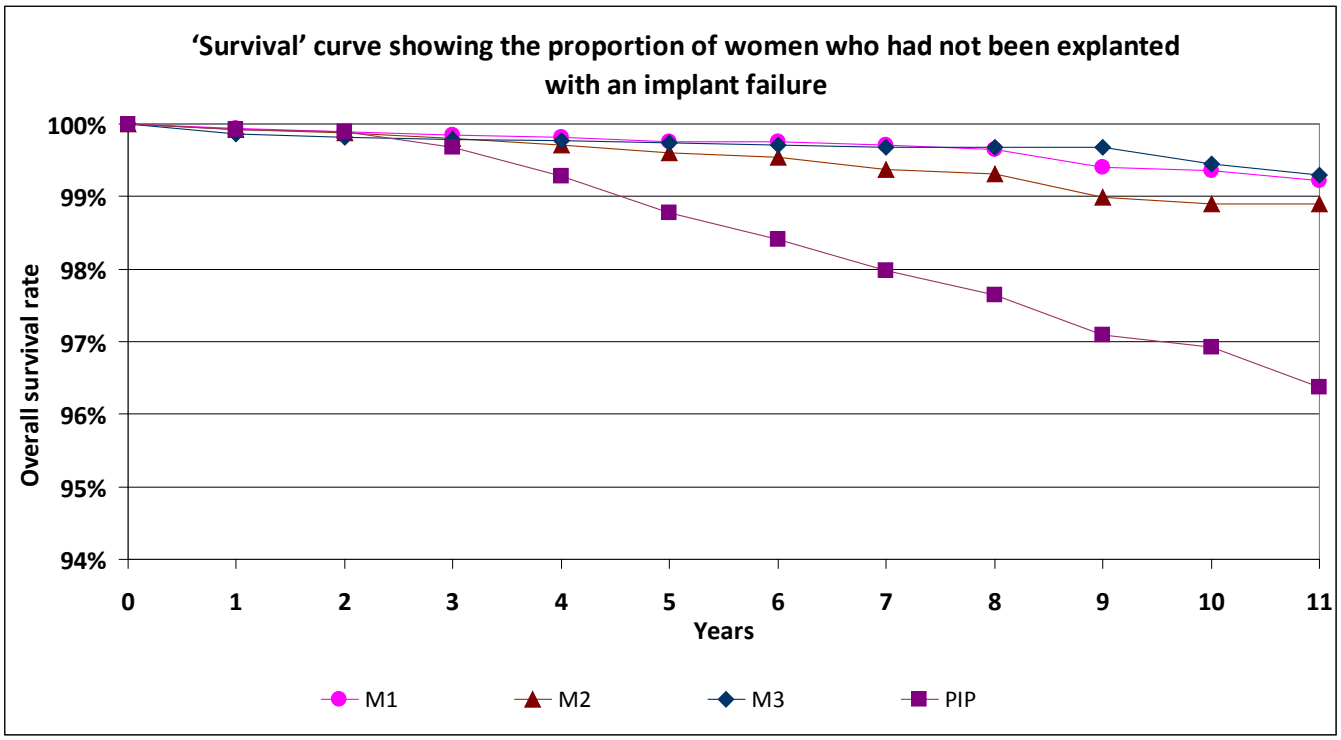


*Figure 1 – 'Survival' curve showing the proportion of women who had not been explanted with an implant failure*

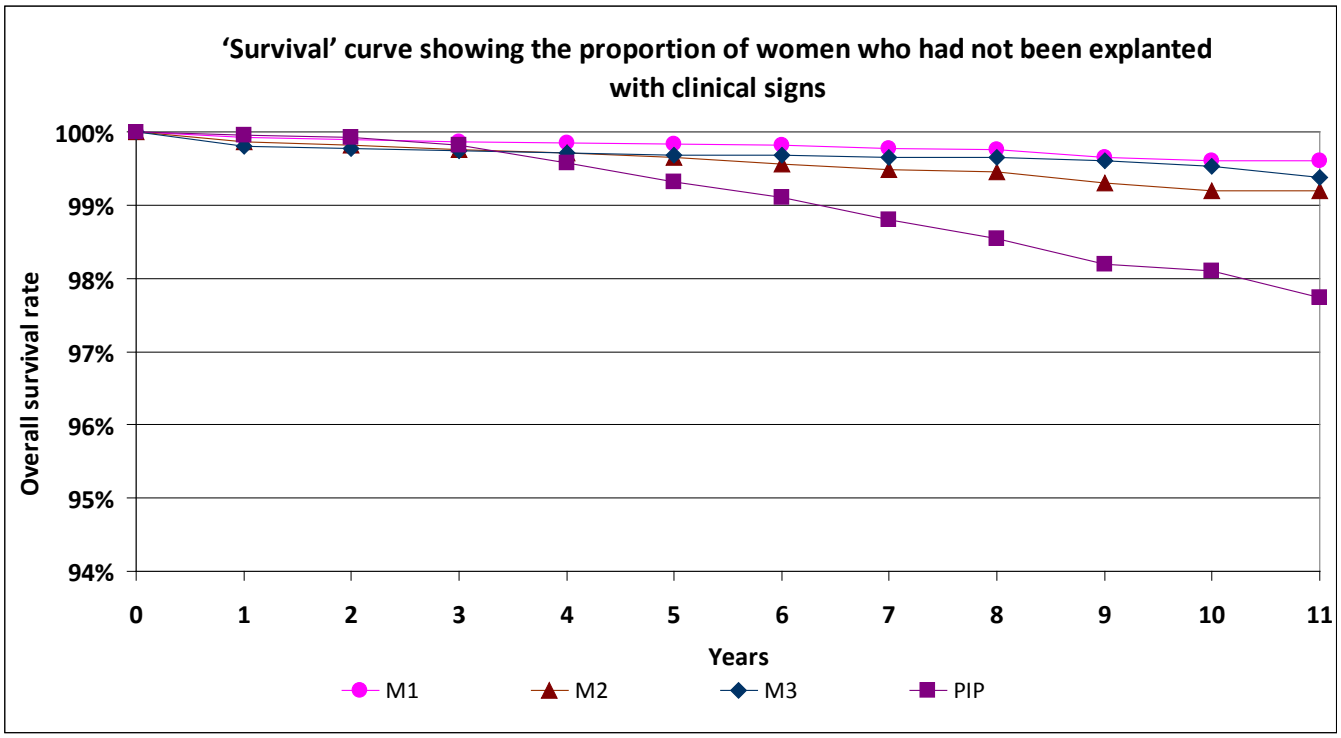


*Figure 2 - 'Survival' curve showing the proportion of women who had not been explanted with clinical signs*

*Detailed findings at explant*

10. Findings at 5870 explant operations featuring one of the four primary brands were recorded, including 1565 PIP explants. Details are shown in Table 4. All comparisons reported below are statistically significant at the 0.1% level:

- 31% had device failure (RR = relative risk ~ 7.3), defined as any of 'rupture already known', 'rupture unexpected finding', or 'significant silicone bleed' in either implant.
- 17% of PIP explants had clinical signs (RR = ~ 4.6), defined as any of 'breast inflammation or lumpiness', 'lymphadenopathy'.
- There was no excess of capsular contracture, haematoma, infection or post-implantation breast cancer cases
- Restricting to explants before January 2010 made no important differences to the findings

| Findings at explant | No. of explants | Implant failure | Inflam-mation alone | Lymph-adeno-pathy alone | Both inflam-mation and lymph-adeno-pathy | Total inflam-mation and/or lymph-adeno-pathy | Capsular Contrac-ture | Haem-atoma | Infec-tion | Primary breast cancer diag-nosed post implant-ation |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ***Counts*** | | | | | | | | |
| All | 5,870 | 670 | 216 | 142 | 65 | 423 | 459 | 107 | 302 | 37 |
| M1 | 2,484 | 112 | 60 | 10 | 14 | 84 | 283 | 74 | 160 | 11 |
| M2 | 1,021 | 46 | 34 | 3 | 2 | 39 | 67 | 5 | 54 | 8 |
| M3 | 800 | 26 | 33 | 2 | 1 | 36 | 26 | 17 | 62 | 10 |
| | | | | | | | | | | |
| Not-PIP | 4,305 | 184 | 127 | 15 | 17 | 159 | 376 | 96 | 276 | 29 |
| PIP | 1,565 | 486 | 89 | 127 | 48 | 264 | 83 | 11 | 26 | 8 |
| | | ***Percentages*** | | | | | | | | |
| All | 5,870 | 11.4% | 3.7% | 2.4% | 1.1% | 7.2% | 7.8% | 1.8% | 5.1% | 0.6% |
| M1 | 2,484 | 4.5% | 2.4% | 0.4% | 0.6% | 3.4% | 11.4% | 3.0% | 6.4% | 0.4% |
| M2 | 1,021 | 4.5% | 3.3% | 0.3% | 0.2% | 3.8% | 6.6% | 0.5% | 5.3% | 0.8% |
| M3 | 800 | 3.3% | 4.1% | 0.3% | 0.1% | 4.5% | 3.3% | 2.1% | 7.8% | 1.3% |
| | | | | | | | | | | |
| Not-PIP | 4,305 | 4.3% | 3.0% | 0.3% | 0.4% | 3.7% | 8.7% | 2.2% | 6.4% | 0.7% |
| PIP | 1,565 | 31.1% | 5.7% | 8.1% | 3.1% | 16.9% | 5.3% | 0.7% | 1.7% | 0.5% |
| | | | | | | | | | | |
| **PIP/ non-PIP ratio** | | **7.3** | **1.9** | **23.3** | **7.8** | **4.6** | **0.6** | **0.3** | **0.3** | **0.7** |
| 95% intervals | | 6.2 to 8.5 | 1.5 to 2.5 | 13.7 to 39.6 | 4.5 to 13.5 | 3.8 to 5.5 | 0.5 to 0.8 | 0.2 to 0.6 | 0.2 to 0.4 | 0.3 to 1.6 |

*Table 4: Findings at explant in retrospective study, comparing PIP with non-PIP branded implants*

11. We can examine the prevalence of clinical problems, splitting explants into those done for a perceived problem and those performed for other reasons:

| | **Explant due to problem** | | | **Explant not due to problem** | | | **All explants** | | |
|---|---|---|---|---|---|---|---|---|---|
| | *n* | *clinical signs* | *%* | *n* | *clinical signs* | *%* | *n* | *clinical signs* | *%* |
| Not PIP | 219 | 67 | 30.6% | 4200 | 92 | 2.2% | 4419 | 159 | 3.6% |
| PIP | 569 | 209 | 36.7% | 999 | 55 | 5.5% | 1534 | 264 | 17.2% |
| **PIP/ non-PIP ratio** | | | **1.2** | | | **2.5** | | | **4.8** |
| 95% intervals | | | 1.0 to 1.5 | | | 1.8 to 3.5 | | | 4.0 to 5.8 |

*Table 5. Prevalence of clinical signs ('inflammation' and/or lymphadenopathy) at explant for PIP and non-PIP implants, depending on whether explant performed due to a perceived problem*

12. Table 5 shows that, if the explant is performed due to an implant problem, there is no difference between PIP and non-PIP implants as to the prevalence of clinical signs. In those explants carried out without a perceived implant problem, the prevalence of clinical signs is slightly higher in PIP implants, but is only 6% compared to 2%.

13. Overall, of 264 PIP patients with clinical signs found at explant, 209 (79%) were identified before the explant.

## Prospective surgical data on PIP explants

14. Data from prospective study of PIP explants carried out by participating surgeons from January 2012. Reasons for explanation were requested, and in the summary at Table 6 below a division has been made between those explanted for 'anxiety' alone, and those for whom an alternative reason was given, including silent rupture, aesthetic change after rupture, breast lumps or lymphadenopathy. The findings are summarized in para 15 of the main report.

| | Finding in at least one of the implants removed | 'Anxiety alone' n=504 | 'Not just anxiety' n=257 | Overall n=761 | % in 'Anxiety alone' | % in 'Not just anxiety' | % in Overall | P |
|---|---|---|---|---|---|---|---|---|
| 1 | Some degree of implant failure (rupture or severe bleed) | 118 | 165 | 283 | 23% | 64% | 37% | <0.001 |
| 2 | Silicone granulomata | 2 | 16 | 18 | 0.4% | 6% | 2% | <0.001 |
| 3 | Axillary lymphadenopathy | 1 | 31 | 32 | 0.1% | 12% | 4% | <0.001 |
| 4 | Loss of cohesion | 37 | 107 | 144 | 7% | 42% | 19% | <0.001 |
| 5 | Inflamed | 33 | 83 | 116 | 7% | 32% | 15% | <0.001 |
| 6 | Capsular contracture | 46 | 37 | 83 | 9% | 14% | 11% | 0.02 |
| 7a | Silicone granuloma < 2cm | 5 | 18 | 23 | 1% | 7% | 3% | <0.001 |
| 7b | Silicone granuloma > 2cm | 0 | 4 | 4 | 0% | 2% | 1% | 0.01 |
| 7c | Silicone granuloma multiple | 0 | 6 | 6 | 0% | 2% | 1% | 0.001 |
| 8a | Silicone related lymphadenopathy – small solitary | 2 | 22 | 24 | 0.4% | 9% | 3% | <0.001 |
| 8b | – small multiple | 1 | 22 | 23 | 0.2% | 9% | 3% | <0.001 |
| 8c | – large solitary | 1 | 11 | 12 | 0.2% | 4% | 2% | <0.001 |
| 8d | – large multiple | 0 | 16 | 16 | 0% | 6% | 2% | <0.001 |
| 8e | – matted | 0 | 2 | 2 | 0% | 0.8% | 0.3% | 0.11 |
| 9 | Lymphadenopathy elsewhere | 0 | 2 | 2 | 0% | 0.8% | 0.3% | 0.11 |
| | Clinical signs with intact implant (2 or 3) | 4 | 39 | 43 | 1% | 15% | 6% | <0.001 |
| | Clinical signs with ruptured implant (7,8 or 9) | 11 | 81 | 92 | 2% | 32% | 12% | <0.001 |
| | Any clinical signs (2,3,7,8,9) | 11 | 90 | 101 | 2% | 35% | 13% | <0.001 |

*Table 6: Findings in 761 explants of PIP devices since January 2012.*

15. Points to note in table 6 include:

- findings are recorded as the ‘worst’ between the one or two implants removed
- almost all comparisons are statistically significant at the 0.1% level – see final column of the table.
- if the explant was for a perceived problem, 64% had device failure, compared to 23% when the explant was for anxiety alone
- the rates for clinical signs were substantially higher for explants due to perceived problems: for explants due to anxiety alone, only 2% had clinical signs.
- for those with a failed implant who had been explanted due to anxiety alone, 11/118 (9%) had clinical signs compared to 90/165 (55%) in those who had a failed implant and had been explanted due to a perceived problem.
- of the 101 with clinical signs, 90 (89%) had been detected pre-explant as having a problem.