TREATMENT OF CARBUNCLES
A COMPARISON OF FOUR DIFFERENT METHODS
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The methods for the treatment of carbuncles are legion, which emphasizes the truth that, whether based on scientific principle or on empiricism, the end results are produced by the art rather than by the science of surgery.

To evaluate these methods is difficult, but any impressions or conclusions derived from recorded facts are worthy of consideration. With this in mind 153 cases of non-diabetic and diabetic carbuncles admitted to the Presbyterian Hospital in the last ten years were studied. Of these only 12 were treated in the out-patient department, and the remainder in the wards.* Infections

* There were many other smaller carbuncles treated in the out-patient department which are not included in this series.
TREATMENT OF CARBUNCLES

of the face severe enough for hospitalization were classed as carbuncles. The four different methods of treatment were: X-ray, surgery, conservative therapy and autogenous blood circuminjection, the last having been discussed in a previous communication.¹

A comparison of the four types of therapy used necessitates a consideration of the following variable factors, either in treatment or pathology:

1. Dissimilarity of carbuncles. A number of carbuncles of certain size and location, pathological involvement, virulence of organism, and resistance of individual may be treated by one method. It is obviously impossible to duplicate all these conditions for the purpose of comparison with another method of treatment.

2. Lack of definite scheme of tabulation of all the cases. For this reason many important facts and observations are lost which might otherwise prove valuable.

3. Accessory therapeutic measures. This is most important, for enthusiasm for any one particular type of therapy frequently makes one ignore the value of any incidental therapy. When such treatment is given it becomes difficult to tell what produced improvement or cure. Of the four methods of treatment under consideration, circuminjection of autogenous blood was the only one in which accessory therapy was not employed.

The efficacy of any treatment from the standpoint of patient and doctor alike embodies the following factors:

1. Relief from constitutional symptoms. Pain, loss of sleep and appetite, fever, chills, etc., cause the patient primarily to seek medical attention.

2. Avoidance of complications, especially bacterial.

3. The end-result. A minimal scar and good function of the involved area are very important. While a patient may disregard these at the time relief is sought, marked scarring, especially if visible, and loss of function bring complaint later.

4. Anaesthesia. Many dread a general anaesthetic, although direct deleterious effects of a brief anaesthesia are practically negligible, except in those in whom it is especially contra-indicated. Any good method of treatment which produces results without an anaesthetic is to be strongly considered.

5. The time element. This includes the time of hospitalization and the time for complete epithelization and return to duty.

So far as the applicability of a method for the doctor himself is concerned, the following must be considered:

1. The amount of skill required.

2. The practicability for all practitioners with limited facilities.

3. The practicability in large hospitals where every facility is available.

A study of Chart I and Table I will give a general idea of the efficacy of the various types of treatment after substitution of the various factors in the equations shown on page 706.

It is only fair to state that the cases receiving conservative treatment alone were not quite as severe as those receiving X-ray plus accessory
**Table I.**

<table>
<thead>
<tr>
<th>Location...</th>
<th>Non-Diabetic</th>
<th>Diabetic</th>
<th>Conservative — 22 cases</th>
<th>Conservative — 36 cases</th>
<th>Conservative — 33 cases</th>
<th>Conservative — 12 cases</th>
<th>Conservative — 6 cases</th>
<th>Conservative — 23 cases</th>
<th>Conservative — 1 case</th>
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</thead>
<tbody>
<tr>
<td><strong>Successful</strong>&lt;br&gt;Back of neck, 5&lt;br&gt;Scapular region, 1&lt;br&gt;Interscapular region, 1&lt;br&gt;Upper and lower lip, 1&lt;br&gt;Nasal region, 1&lt;br&gt;Upper lip, 1&lt;br&gt;Lower lip, 1&lt;br&gt;Sacral region, 1</td>
<td><strong>Successful</strong>&lt;br&gt;Back of neck, 27&lt;br&gt;Upper lip, 7&lt;br&gt;Lower lip, 7&lt;br&gt;Sacral region, 3&lt;br&gt;Occipital region, 2&lt;br&gt;Scapular region, 2&lt;br&gt;Buttock, 1&lt;br&gt;Post femoral region, 1&lt;br&gt;Zygomatic region, 1&lt;br&gt;Volar forearm region, 1&lt;br&gt;Nasal region, 1&lt;br&gt;Chin, 1&lt;br&gt;<strong>Died</strong>&lt;br&gt;Trochanteric, 1&lt;br&gt;Lumbar, 1</td>
<td><strong>Successful</strong>&lt;br&gt;Back of neck, 10&lt;br&gt;Scapular region 1&lt;br&gt;<strong>Died</strong>&lt;br&gt;Back neck, 4&lt;br&gt;Suprascapular, 1&lt;br&gt;Interscapular, 1&lt;br&gt;Temporal, 1&lt;br&gt;Lumbar, 1</td>
<td><strong>Died</strong>&lt;br&gt;Back neck, 4&lt;br&gt;Suprascapular, 1&lt;br&gt;Interscapular, 1&lt;br&gt;Temporal, 1&lt;br&gt;Lumbar, 1</td>
<td><strong>Died</strong>&lt;br&gt;Back neck, 4&lt;br&gt;Suprascapular, 1&lt;br&gt;Interscapular, 1&lt;br&gt;Temporal, 1&lt;br&gt;Lumbar, 1</td>
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<tr>
<td><strong>Unsuccessful—operated</strong>&lt;br&gt;Back of neck, 9&lt;br&gt;<strong>Died</strong>&lt;br&gt;Upper lip, 1</td>
<td><strong>Unsuccessful</strong>&lt;br&gt;Back neck, 3&lt;br&gt;Interscapular region, 1</td>
<td><strong>Unsuccessful</strong>&lt;br&gt;Back of neck, 1</td>
<td><strong>Unsuccessful</strong>&lt;br&gt;Back of neck, 1</td>
<td><strong>Unsuccessful</strong>&lt;br&gt;Back of neck, 1</td>
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**Accessory Therapy**

- The treatment itself equals accessory therapy and consisted in poultices, carbolization, narcotics, cold compresses, Dakin compresses, ichthylol, "thermolite," ice bag, antiseptics
- None. The cases were selected by a committee as spreading carbuncles and only a dry dressing was used
- Treated with ichthylol and boric acid.

<table>
<thead>
<tr>
<th>Accessory Therapy</th>
<th>X-ray — 21 days after X-ray</th>
<th>Surgery — 56 cases</th>
<th>Conservative — 33 cases</th>
<th>Blood circuminjection — 12 cases</th>
<th>X-ray — 6 cases</th>
<th>Surgery — 23 cases</th>
<th>Conservative — 1 case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultices, Dakins, Narcotics. Wet dressings. Antiseptics. Ichthylol. X-ray. Carbolization. Blood circuminjection</td>
<td>1.21 days after X-ray.&lt;br&gt;Tissues involved to ligamentum nuchae.&lt;br&gt;2.16 days after X-ray.&lt;br&gt;Pus under 1 flap.</td>
<td>1 case required 3 operations.&lt;br&gt;3 cases required 2 operations.&lt;br&gt;Extension found</td>
<td>None. The cases were selected by a committee as spreading carbuncles and only a dry dressing was used</td>
<td>Insulin, (all cases). Poultices. Dakin's. Narcotics. &quot;Thermolite.&quot; Ichthylol. Caustic. Autogenous vaccine</td>
<td>Insulin, (½ of cases). Poultices. Dakin's. Narcotics. &quot;Thermolite.&quot; Ichthylol. Caustic. Autogenous vaccine</td>
<td>Treated with ichthylol and boric acid.</td>
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<td>Findings at operation in unsuccessful cases</td>
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<td>3. 14 days after X-ray. Extensive necrosis.</td>
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<td>4. 12 days after X-ray. Extensive necrosis.</td>
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<td>5. 10 days after X-ray. Ligaments of spine involved—area from ext. occipital protuberance to VI cervical vertebra and 4 cm. to each side of midline.</td>
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<td>6. 3 and 8 days after X-ray. Extensive necrosis.</td>
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<td>7. 7 days after X-ray. Extensive necrosis.</td>
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<td>8. 5 days after X-ray. Muscle involved.</td>
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<tr>
<td>9. 3 days after X-ray. Extensive necrosis.</td>
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</table>

| Relief pain and constitutional symptoms | ±⁴ | ++++ | ++ | ++++ | ± | +++ | +++ |
| Complications and death | + | ± | - | - | - | +++ | - |
| Time element | +++ | ++ | + | ± | +++ | +++ | + |
| End result, scar function | ++ | ++++ | + | ± | ++ | ++++ | + |

1. As a general rule the following technic was used: 8½ inch spark gap, 3 mm. of aluminum as a filter, and a dosage of ½ to ¾ of a skin unit (erythema dose).
2. By surgery is meant radical incision, crucial or multiple, with undermining of flaps and excision of slough in some cases. Fifty-one cases had this treatment and three had excision.
3. This means, as a general rule, a combination of accessory measures. The most frequent combination was poultice, carbolization, narcotics. The accessory therapy in those patients who had surgery is almost a negligible factor, for it is known that in control cases, where just a radical operation with drainage is done, the results are practically the same.
4. The + signs express degree.
therapy. On the other hand, the accessory therapy as a whole was probably more intensive than the conservative treatment. The logical question which then arises is, "What produced the 54 per cent. cure in the first group: X-ray therapy, accessory therapy, or a combination of both?" In the diabetic and non-diabetic cases treated by this method, the extensive spread

Carbuncle + Surgery + Anaesthesia + Accessory therapeutic measures

Carbuncle + X-ray - Anaesthesia + Accessory therapeutic measures

Carbuncle + Blood circuminjection + Anaesthesia - Accessory therapeutic measures

Carbuncle + Conservative treatment - Anaesthesia

and tissue involvement will be noted in Table I in those cases considered unsuccessful and operated upon.

Summary.—The difficulty of evaluation of the various methods of treatment in this series must be apparent. Each case is a problem in itself and surgical judgment should be a guide in therapeutic preference. From the facts as noted, the following conclusions are presented for consideration:

1. In large carbuncles, diabetic and non-diabetic, the treatment of choice is radical surgery.

2. In small, superficial carbuncles and in some large carbuncles, including those of the face, X-ray therapy as an aid to conservative therapy (poultices, carbolization, etc.) has given good results. If, however, improvement does not occur in three or four days, other measures (surgery, circuminjection of autogenous blood) are indicated.

3. In diabetic carbuncles prompt establishment of free drainage is essential in order to prevent spread of infection. X-ray therapy without surgery is contraindicated.

4. Circuminjection of autogenous blood may be used in selected cases and it is a valuable adjunct in accessible spreading infections treated by any other method.

5. There has been no proof in the clinical cases analyzed in this series that X-ray therapy alone effected a cure. Reports in the literature seem to confirm this experience.

REFERENCE